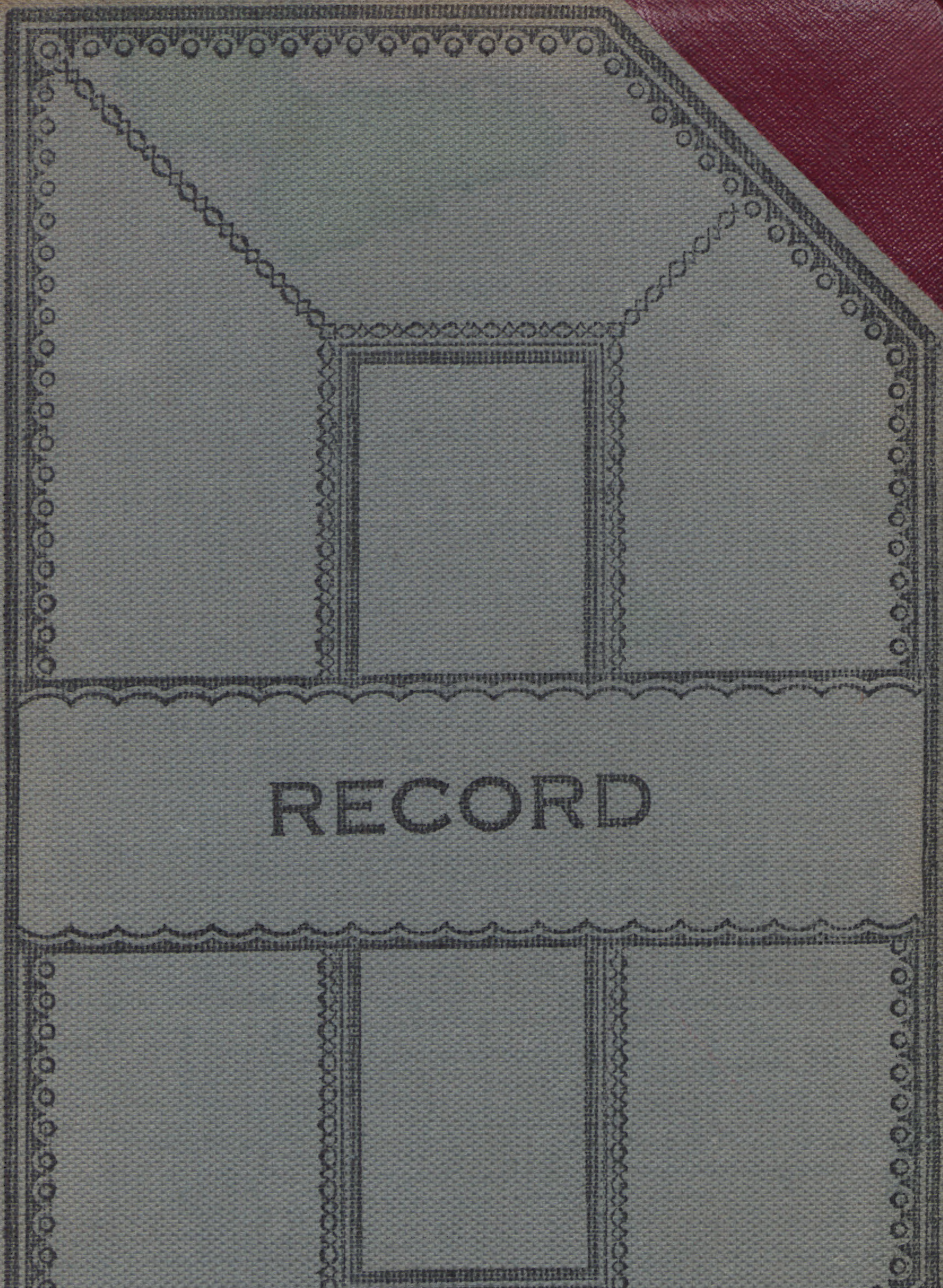

RECORD

38135-38642

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F. R. Fosberg

Collection and Field Note Book

No. 47

(May 29, 1956 - Oct. 5, 1956)

(38135 - 38662)

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TUNDRA CURVES ON THE TRAIL RIDGE ROAD IN ROCKY MOUNTAIN NATIONAL PARK, COLORADO. THE TRAIL RIDGE ROAD IS SAID TO BE THE HIGHEST CONTINUOUS AUTOMOBILE ROAD IN THE WORLD. THIS PICTURE WAS TAKEN NEAR ITS HIGHEST POINT (12,183 FT.).

P222

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PLANTS OF THE RYUKYU ISLANDS

MIYAKO JIMA

Litsaea japonica (Thuhb.) Mirbel

Locality

Occurrence

Date 1956 Alt. m. (from map)

Coll. F.R. Fosberg No.

Remarks

Pacific Vegetation Project

Plants collected by K.Ok~~a~~uhara and K.Sunagawa
det. E.H.Walker unless otherwise
indicated

2 each

Sept. 30, 1956, Kurema ~~Island~~ Jima

1 Leucas

②

3 Abutilon indicum (L.) Sweet

4 Kalanchoe pinnata (Lam.) Pers.

5 Panicum paludosum Roxb. det.EHW, OK, A. Chase

6 Breynia

7 Thuarea involuta (Forst.) R.& S. OK, A.Chase

8 Psychotria

9 Melicope awadan (Hatus.) Ohwi & Hatus.

10 Piper kadsura (Choisy) Ohwi

11 Erigeron canadensis L.

12 Gymnosporia diversifolia Maxim.

13 Kyllinga brevifolia Rottb.

✓ 14 Dactyloctenium aegyptium (L.) Beauv. OK,A.Chase

15 Cyperus rotundus L.

16 Wikstroemia retusa A. Gray

17 Urena lobata L. var.

18 Cassia tora L.

19 Ampelopsis brevipedunculata (var. maximowiczii
(Regel) Rehd.?)

20 Leucaena glauca (L.) Benth.

✓21 Echinochloa colonum (L.) Link OK A. Chase

22 Verbena officinalis L.

2

Oct. 3, 1956, Irabu Jima and Shimoji Jima ~~Islands~~

23 Cyperus rotundus L.

24 Dactyloctenium aegyptium (L.) Beauv. OK,A. Chase

25 Setaria viridis (L.) Beauv. OK, A.Chase

26 Emilia sonchifolia (L.) DC.

27 Corchorus acutangulus Lam.

28 Portulaca oleracea L.

29 Sophora tomentosa L.

30 Euonymus japonicus Thunb.

31 Abutilon indicum (L.) Sweet

32 Smilax

33 Leucaena glauca (L.) Benth.

34 Phyllanthus

✓35 Sporobolus elongatus L. OK, A. Chase

✓36 Eleusine indica (L.) Gaertn.f. OK, A. Chase

37 Ehretia microphylla Lam.

38 Elaeagnus macrophylla Thunb.?

39 Asclepias curassavica L.? (sterile)

40

40 Rhynchosia minima (L.) DC.?

41 Thuarea involuta (Forst.) R.& S.   OK A. Chase

42 Euphorbia atoto Forst.

㊸

44 Cassytha filiformis L.

45 Crepidiastrum lanceol~~o~~atum (Houtt.) Nakai

46 Limonium arbusculum (Maxim.) Makino

47 Ficus erecta Thunb.

48 Gardenia jasminoides var. grandiflora Nakai

49 Lygodium microstachyum var. glabrescens Nakai

50 Breynia

51 Raphiolepis liukiuensis (Koidz.) Nakai

52 Pittosporum tobira (Willd.) Ait.

(53)

54 Vitex trifolia var. simplicifolia Cham.

55 Berchemia lineata DC.

(56)

57 Pongamia pinnata (L.) Merr.

58 Sageretia theezans (L.) Brongn.

59 Melicope awadan (Hatus.) Ohwi and Hatus.

60 Nerium indicum Mill.

61 Calophyllum inophyllum L.

62 Euphorbia neriifolia L.

63 Tylophora tanakae Maxim.

64

65 Lespedeza striata (Thunb.) H.& A.

66 Zanthoxylum arnottianum Maxim.

67 Fimbristylis monostachya (L.) Hassk. det J. H. Kern

68 Leucas

69 Boehmeria nip~~p~~ononivea var. concolor (Makino) Ohwi

70 Lepidium virginicum L.

71 Artemisia ?

72 Vitis?

73 Physalis angulata L. vel aff.

74 Commelina auriculata Bl. det FRF

75 Oxalis corniculata L.

76 Cirsium perhaps C. brevicaule A. Gray

77 Urena lobata L. var.

78 Achiranthes mollicula Nakai

79 Ipomoea pes-caprae (L.) Sweet

80 Euphorbia hirta L.

81 Verbena officinalis L.

82 Premna obtusifolia R. Br.

83 Bruguiera conjugata (L.) Merr.

84 Youngia japonica (L.) DC.

85 Paederia chinensis Hance

86 Phyla nodiflora (L.) Greene

87 Fanicum paludosum Roxb. OK A.Chase

87a Solanum nigrum L.

88 Kalanchoe pinnata (Lam.) Pers.

88a Gymnosporia diversifolia Maxim.

89 Euphorbia heterophylla L.

90 Wikstroemia retusa A. Gray

91 Euphorbia atoto Forst.

92 Callicarpa japonica Thunb.

93 Scilla scilloides (Lindl.) Druce

94 Eccoilopus cotulifer (Thunb.) A. Camus OK A. Chase

95 Lactuca indica ssp. typica

96 [illegible]

97 Cyclosorus acuminatus (Houtt.) Nakai

98 Lysimachia mauritiana Lam.

99

100 Setaria lutescens (Weigel) F.T.Hubb. OK, A. Chase

101 Wedelia chinensis Less.

√ 102 Digitaria snaguinalis (L.) Scop. OK A. Chase

103 Melochia corchorifolia L.

104 Imperata cylindrica (L.) Beauv. OK A. Chase

105
~~106~~
106 Zoisia tenuifolia Willd. OK A. Chase
107 Evolvulus alsinoides L.
108 Alysicarpus vaginalis (L.) DC.
109 Clerodendrum inerme (L.) Gaertn.

Sept. 30, 1956 Kurema ~~Island~~ Jima

110 Solanum verbascifolium L.
111 Bambusa
112 Croton cumingii M.-A.
113 Leptochloa panicea (Retz.) Ohwi OK A. Chase
114 Paederia chinensis Hance
115 Euphorbia hirta L.
116 Antidesma pentandrum var. barbatum (Presl) Merr.
117 Hibiscus tiliaceus L.
118 Sporobolus elongatus OK A. Chase
19 Phyla nodiflora (L.) Greene
120 Cerbera manghas L.
121 Apluda mutica L. OK A. Chase
122
123 Bidens biternata Merr. & Sherff
124 Wedelia chinensis (L.) DC.

125 Sophora tomentosa L.

126 Nephrolepis biserrata (Sw.) Schott

127 Cyrtococcum patens (L.) A. Camus OK A. Chase

128 Emilia sonchifolia (L.) DC.

129 Cyclosorus acuminatus (Houtt.) Nakai

130 Setaria

131 Boehmeria nivea (L.) Gaud.

132 Ehretia microphylla Lam.

133 ~~Physalis angulata L. vel aff.~~ Pisonia aculeata L.
sterile (spines straight, atypical)

134 Physalis angulata L. vel aff.

135 Corchorus acutangulus Lam.

136 Rhynchosia minima (L.) DC.

137 Alternanthera sessilis (L.) R.Br.

138 Brachiaria subquadriparia (Trin.) Hitchc. OK,A.Chas

139 Lespedeza cuneata G. Don

140 Callicarpa japonica Thunb.

141 Raphiolepis liukiuensis (Koidz.) Nakai

142 Commelina diffusa Burm. det. FRF

143 Jussiaea repens L.

144 Ficus retusa var. nitida Thunb.

145 Pittosporum tobira(Willd.) Ait.

146 Limonium arbusculum (Maxim.) Makino

76 - 5 Xanthoxylum

75 - 5 Celtis

74 - 3 Wikstroemia

73 - 5 Erythrina

72 - 2 Saccharum spontaneum

71 - 3 Pipturus

70 - 4 Clerodendrum

69 - 5 Saccharum spontaneum

68 - 5 Pterocarpus?

67 - 5 Firmiana

66 - 3 Diospyros ferrea

65 - 3 Distylium

64 - 2 Croton

63 - 3 Ficus

62 - 5 Schefflera octophylla

61 - 2 Euonymus

55 - 2 Thea ?
54 - 3 Arundo donax
53 - 7 Ophiorhiza
52 - 5 Piper
51 - 2 Xanthoxylum
50 - 0
49 - 6 Turpinia
48 - 5 Ilex
47 - 4 Raphiolepis
46 - 5 Korthalsella
45 - 5 Camellia
44 - 4 Dioscorea
43 - 3 Epipremnum pinnatum
42 - 5 Boehmeria
41 - 4 Ardisia sieboldii
40 — 4 Psychotria
39 - 5 Ternstroemia

60-2 Quercus thunbergii

59-2

58-3 Morinda umbellata

57-2 Psychotria

56-3 Imperata cylindrica

continued from p. 10
of book 47

By R. J. Alvis

Ternstroemia gymnanthera W. & A.

39 (5) Tree, 15 ft. tall; suppressed in a predominantely Oak forest; elevation approximately 600 ft.; mountain ridge 1 mile S.S.W. of Kabira Village; very dark grayish brown bark; fleshy fruit, pale green to red colored; soil light colored, acid, sandy loam, lithosolic, from granite.
Collected 11, August. 1956

Psychotria

40 (4) Low tree, 10 ft. tall; part of understory of forest predominantly Oak which is 40' to 50' tall; very dark gray bark; mountain ridge approximately 600 ft. elevation, 1 mile S.S.W. of Kabira Village; berries green colored; moderately deep, slightly acid silt loam soil from diorite.
Collected 11, Aug. Locally abundant.

Ardisia sieboldii Miq.

41 (4) Suppressed tree 20 ft. tall. Same site as #40; bark light gray.
Collected 11, Aug.

Boehmeria [illegible]

42. (5) Spindly tree of understory; dense canopy overhead at 30-35 ft.; head of steep narrow draw; elevation approximately 550 ft., 1 mile S. W. Kabira Village; moderately deep acid, sandy loam soil.
Collected 11, Aug. Very abundant.

43 (3) Epipremnum pinnatum (L.) Engl. Collected from tree trunk, 6 ft. from ground; same site as #42.
Collected 11, Aug. Abundant.

Specimens no. 44 through 49, collected 19, Aug. from main ridge of Banna-dake 2-1/2 miles North of Ishigaki City; elevation from 550 ft. to 650 ft.; soil moderately deep, lithosolic acid silt loam from chert and schist; vegetative type is low dense forest 15-20 ft. tall.

Dioscorea cirrhosa Lour.

44 (4) Vine, taken from top of 10 ft. tree; fruit green colored.

Camellia japonica var. hozanensis (Hayata) Yamamoto

45 (5) Tree codominant; 12 feet tall; very light grayish brown bark; fruit red colored; locally abundant.

Korthalsella opuntia (Thunb.) Merr.

46 (5) Mistletoe, collected from tree 10' tall.

Raphiolepis liukiuensis (Koidz.) Nakai

47 (4) Codominant tree 10 ft. tall; bark light brownish gray; berries green colored.

Ilex

48 (5) Dominant tree 12 ft. tall; bark brownish gray; berries green; abundant locally.

Turpinia ternata Nakai

49 (6) Codominant tree 10 ft. tall; bark dark brown; berries green.. Specimens number 50 thru

Specimens number 50 thru 53 collected from near head of Miyara River, 2 miles West of Tozato Village; elevation approximately 300 feet; terrace soil, very deep, well developed silt loam over clay loam; acid.
Collected 19, Aug.

50 Specimens missing.

Xanthoxylum ←

51 (2) Suppressed 12 foot tree; overhead canopy thick; 20 ft. in height; nearly level terrace; bark light brownish gray. Locally abundant. Melicope [illegible] (Hatus.) Ohwi & Hatus.

kadsura (Choisy) Ohwi

52 (5) Piper (?) Vine, slightly cordate leaves; collected from tree in a moist, shady draw.

Ophiorrhiza liukiuensis Hayata

53. (3) Suffrutescent, 2-1/2 feet tall; dense overhead canopy; flowers white.

Arundo donax L. OK A. [illegible]

54 (3) Giant reed (?) river bank; elevation 270 feet; open; wet, acid alluvial silt loam.

Itea formosana H. L. Li

55 (2) Shrub 8 feet tall; sunny roadside; 1 mile N. W. of Kawahara Village; elevation 120 feet; deep slightly acid silt loam soil from impure limestone.

Specimens 56 through 61 collected from foothills and lower mountain slopes approximately 1 mile east of Shiramizu; elevation from 300 to 400 feet; light colored, well developed, shallow, acid, stony sandy loam soil. Second growth forest with irregular canopy from 10 feet to 40 feet. Collected 19, Aug.

cylindrica (L.) Beauv. OK A. Chase

56 (5) Imperata ~~(?)~~ Grass with flower; small opening on rather large bench; no overhead canopy.

Psychotria

57 (2) Tree, suppressed 6 ft. tall; dense overhead canopy; berries yellowish green.

Morinda umbellata L. OK

58 (3) Vine collected from tree; dense shade; green berries.

Illicium masa-ogatae (Makino) A.C. Smith

59 (2) Tree 10 feet tall; codominant; cup shaped fruits; dark gray bark.

Quercus thunbergii Castanopsis cuspidata (Thunb.) Schott

60 (2) ~~Castanopsis~~ (?) Dominant tree 25 feet tall; gray bark; common.

Evonymus

61 (2) Small dominant 10 feet tree; berries black; locally abundant. Euscaphis japonica (Thunb.) Kanitz

Specimens 62 through 67 collected on Yarabudake and vicinity 1 September. Moderately deep, heavy, loamy, dark colored surface soil over red clay, latosolic, acid, on basic volcanics. Cut-over forest 30-50 feet canopy.

octophylla (Lour.) Harms OK

62 (5) Schefflera, codominant 35 feet tree; 40% northern slope; elevation 360 feet; very light gray bark; locally abundant.

Ficus ampelas Burm. f.

63 (3) Small, 6 foot, spindly, suppressed tree; canopy at 40 ft; broad ridge top; elevation 430 feet; berries light greenish yellow; bark very dark brown.

Croton Cumingii M.-A.

64 (4) Small shrub; 3 feet; dense overhead canopy; broad ridge; pistils white; elevation 430 feet; very abundant locally.

Distylium racemosum S. et Z.

65 (3) Tree dominant, 20 feet tall at summit of Yarabu-dake; shallow lithosolic acid loam; fruits brown; slightly tomentose; elevation 630 feet.

Diospyros ferrea var. buxifolia (Rottb.) Bakhuizen

66 (3) Tree dominant, 20 feet tall; berries chiefly yellow, some red to very dark red; same site as #65.

simplex var. glabra Hatusima

67 (5) Firmiana, 20 feet tall; dominant; just below summit of Yarabudake; soil as #64; slope 50%; elevation 600 feet. ?

(?) Pongamia pinnata (L.) Merr.

68 (5) Pterocarpus, dominant; 40 feet tall; 1/2 mile N. W. of Yarabu school; gentle slope at foot of mountain; acid silt loam soil derived from schist; bark white; 3 very large trees of this species and several smaller sprouts; very little foliage; elevation 100 feet.

Saccharum spontaneum L. OK A. Chase

69 (5) ~~Miscanthus~~, Nagura area, 1 mile S. S. E. of Bailey bridge over Nagura River; Shioya soil; elevatioh 10 feet; most of area in Imperata. Sept. 9.

Clerodendrum trichotomum Thunb.

70 (4) Dominant tree, 15 feet tall, 1/2 mile E. of Nagura school; roadside; deep well developed terrace soil, acid; flowers white to purplish, fragrant; bark pale grayish brown. Sept. 9, 1956

Pipturus arborescens (Link) C. B. Rob.

71 (3) ~~Morus~~, sunny roadside 200 feet west of Yaeyama Agricultural Experimental Station; deep sandy loam soil, slightly acid from impure limestone; elevation 110 feet; bark brown; fruit green. Sept. 9

Saccharum spontaneum L. OK A. Chase

72 (2) ~~Miscanthus~~, 1/4 mile west of Shiraho Village; very shallow, rocky, heavy alkaline clay between limestone outcrops; open grazed area 10-15 feet above sea level. Sept. 9.

variegata var. orientalis (L.) Merr.

73 (5) Erythrina, 25 feet tall, 300 yards S. E. of Miyara River bridge; roadside; Shioya loamy sand. Sept. 9.

Wikstroemia retusa A. Gray

74 (7) Low suffrutescent; same site as #72; corrolla, greenish yellow; pistils orange. Sept. 9.

boni[illegible]sis Koidz.

75 (5) Celtis, Ishigaki City, main street, 1/2 mile west of downtown area; specimen 60 feet tall; Shioya soil. Sept. 10.

76 (5) Xanthoxylum, 1/2 mile north of Shiramizu; elevation 60 feet; deep acid, sandy loam colluvium; partly open stream bank. Collected Sept. 11.

Fagara ailanthoides (S. + Z.) Engler

F. R. Fosberg
Collection Book
No. 47
beginning with
38135, ending with
38662
plus small collection by
others.

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1956 Ryukyu Is

May 29 – West branch of
Miyara Gawa.

7 1 Rhododendron

Helen Foster

8 2 Lycopodium cernuum L.

Setendo Yamazato

May 30
2 3 Eugenia jambos
solitary in valley bottom
S. Yamazato

May 31 3/4 mi. s.w. of Ibaruma
4 Psidium guajava

S Yamazato

Ishigaki

200 m. small tree; flowers
a rich crimson.

200 m.

100 m. tree. "buin-do", fruit edible.

"Bamshuni" fruit eaten

1956 Ryukyu Is.

5 Oryza sativa var.
grown in deepwater,
one crop a year) occurrence

5

behind Sonai   Helen L. Foster

Yonaguni Shima

said to be a variety
peculiar to Yonaguni,
not as productive nor
as good as ordinary
varieties.

June 1956

3 6 Gardenia jasminoides var. grandiflora Nakai
3 km. n.e. of Nosoko
along stream ~~in~~ among
other trees.
Coll. S. Yamagata

July ↓ 1956

5 7 Actinidia rufa (S. & Z.) Planch.
in secondary forest
at waterfall between
Yonehara and Yoshihara
Coll. S. Serikyaku

2 8 Sansevieria
Hirai
Coll. H. Tafuku

3 9 Ilex warburgii Loes.
near Kainan Village
in dense forest

3 10 Jasminum sambac (L.) Ait.
Hirai

3 11 Antidesma japonicum S. & Z.
near Kainan Village
in dense forest

3 12 Hyptis capitata Jacq.
rice field (no locality)

5 13 Acacia confusa Merr. ✓
Experimental Farm,
north of Ishigaki City cont'd p. 190

tree

vine twining in tree.

erect, mottled; flowers
whitish.

1956 Ryukyu Is.
collections by R. J. Alvis

16

2 each

April – 1.1-1.2 mi. west of Ibaruma
on mountain side, with shallow, acid, latosolic silt loam soil.

17 Ardisia sieboldii Miq.

18 Ficus virgata Reinw.
on exposed road bank

19 Premna obtusifolia R. Br.
dominant

20 Psychotria

21 Ardisia quinquegona Bl.
moist shady draw

22 Lasianthus rigocarpus Masam.
moist shady draw

23

April – 1.4 mi. west of Ibaruma
same

24 Psychotria

25 Pouteria obovata (R. Br.) Baehni

26 Mussaenda parviflora Miq.

27 Cerbera manghas L.

28 Mallotus philippensis M.-A.

Ishigaki
(16 Acacia confusa Merr. R
Waterworks
planted along road
small tree, flowers yellow.

250'
↓

tree 20 ft. tall, with smooth brownish gray bark.

shrub-like; berries red

tree 25 ft. tall

tree 15 ft. tall, bark dark grayish brown.

270'
"spindle-like" supressed tree, 10 ft. tall

~~tree 10 ft~~ tree 10 ft. tall, ~~tree~~ bark very dark gray.

small tree or shrub, bark mottled light and dark gray.

270'

understory tree 10 ft. tall, bark very dark brown, smooth.

tree 20 ft. tall

climbing vine with yellow flowers.

tree 20 ft. tall, sap milky.

tree 15 ft. tall, fruit orange, pubescent.

1956 Ryukyu Is.
collections by R. J. Alvis

April – 2 miles east of Yoshihara
on deep slightly acid sandy
loam soil on sloping terrace

29 Maesa tenera Mez
in 25 foot forest.

30 Psychotria
in 25 foot forest

31 Trema orientalis Bl.
in 25 foot forest

32 Macaranga tanarius (L.) M.-A.
in 25 foot forest

~~33~~

May 30 – head of Nagura Valley
in secondary thicket
in ravine on terrace.
~~33~~ on moist loamy sand.

33 Styrax japonica var. iriomotensis Masam.

34 Euscaphis japonica (Thunb.) Kanitz.

35 Schima liukiuensis Nakai

May 30 head of Nagura River

36 Sarcandra glabra (Thunb.) Nakai
moist shady stream bank

37 Itea formosana H.L. Li
shady creek bottom

~~38~~ June 13
open edge of field, in heavy deck

38 Lysimachia sikokiana Miq.

(continued in pocket on front cover)

Ishagiki

understory shrub

understory shrub.

tree 15 ft. tall

tree 20 ft. tall (mature flowers from different individuals)

60 ft.

tree 15 ft. tall, bark mottled gray and brown.

tree 15 ft. tall, bark smooth, mottled dark and light gray.

tree 20 ft. tall. flower with white corolla and yellow pistils.

200 ft. suffrutescent, 5 ft. tall.

300 ft. suffrutescent, 3 ft. tall.

slightly alkaline soil.

30 ft. low annual with yellow flowers.

1956 Ryukyu Is.

Aug. 8. Forested area north of Karimata
Shrine grove is mostly Garcinia, some Cycas, Pouteria, Diospyros ferrea. This is in a beach forest area. The surrounding littoral forest is largely Pandanus with Ardisia, Hernandia, Raphiolepis, Hibiscus tiliaceus, Scaevola, Premna, etc.

Aug. 8 - Forested area just back of beach north of Karimata

38135 Garcinia spicata Hook. f.
5 dominant in grove around shrine on sand

P. obovata (R. Br.) Baehni
c 36 Pouteria ~~ferruginea~~
common in littoral forest

3 37 ~~[illegible]~~
Gymnosporia diversifolia Maxim.
common in littoral forest

2 38 Raphiolepis liukiuensis (Koidz.) Nakai
common in littoral forest.

5 39 Pittosporum tobira (Willd.) Ait.
occasional just back of beach

6 40 Turpinia ternata Nakai
occasional in lowland forest on limestone

41 Ardisia sieboldii Miq.
~~[illegible]~~ very common on limestone in forest

Miyako I.

The forest on limestone is largely Diospyros maritima, Ardisia, ~~etc.~~ Garcinia, etc.

2 m. large old trees 3-4 dm. dbh., spreading, fruits on ground yellow, those still on trees green.

" – small tree 6 m. tall, fruit green to black.

" – shrub 1.5 m. tall; young buds only.

" – small tree, fruit just turning reddish.

" – shrub 2 m. tall, fruit green.

4 " – shrub 2 m. ~~tall~~, fruit immature

"

1956 Ryukyu Is.

38142 Psychotria liukiuensis
1 occasional in forest on limestone

1 43 ~~[illegible]~~? Cynanchum liukiuense Warb.
occasional in scrubby forest on limestone

5 44 Aristolochia kankauensis Sasaki
occasional in scrubby forest on limestone

5 45 (~~[illegible]~~) Parsonsia P. helicandra H.&A. ~~cumingiana~~ A. DC.
occasional in scrubby forest on limestone

3 46 (~~[illegible]~~) Sageretia theezans (L.) Brongn.
locally common back of beach in low scrub

Aug. 9. – Sugama
Thickets between fields, along small ravines, around small ponds.

Ardisia
Gardenia
Musa
Arenga
Ficus retusa
Melia
Thespesia
Morus
~~Acacia~~
Boehmeria
Machilus
Podocarpus
Livistona
Diospyros ferrea

Miyako I.

4 m. ↓ shrub, flowers pale greenish.

Twining vine, fruit immature.

Twining vine; fruit immature.

Twining vine; flowers pale green; fruit immature

~~[illegible]~~ low shrub, sterile.

Calophyllum
Celtis??
Cinnamomum!
Murraya
Miscanthus
small bamboo
Commelina (J. Tsuyugusa)
Leucaena
~~Ma~~ Macaranga
Arundo donax

Mostly cultivated patches, separated by low stone walls with bushy hedges, or by grassy banks. Wet places have taro, dry sugar cane and sweet potatoes.

1956

Aug. 9 - Yonaha Wan
~~south~~ west side near Yonaha
lined with low rough
limestone with scrub
growth, largely Excoecaria,
badly browned by typhoon
some sparse mangroves,
Kandelia, principally.

a few Pandanus.
On rocks near h.t. level
Limonium, Paspalum
vaginatum, Lepturus,

The Excoecaria fringe
also contains Clerodendrum
Hibiscus, Pongamia,
Carmona, etc.
Back of it are hedgerows
of Ficus retusa, Pongamia etc
Ardisia, etc.

Aug 9 - Yonaha ~~south~~ west
shore of Yonaha Wan
in low scrub on rough limestone

38147 Ampelopsis brevipedunculata (var. hancei Rehd.?)
5 common

Litsea japonica (Thunb.) [illegible]
5 48 Pouteria ~~ferruginea~~
occasional

5 49 Excoecaria agallocha L.
abundant, dominant

Aug. 9 - between Hirara
and Kaamichi
the uplands are largely
cultivated ~~h~~ in small
patches, principally
sugar cane and sweet
potatoes; the patches
are frequently separated
by low stone walls
covered by brush, or by
irregular rows of
small Acacia confusa,
or Cassia sp., or by Agave, or
Erythrina trees, or by
grassy banks. There
are patches of rocky
ground with Pandanus
or mixed grass and
Pandanus, and small
plantings of Casuarina,
Calophyllum or Pinus.

1-2 m.
vine climbing in
bushes; flowers pale
greenish, fruit purple.
— shrub 2 m. tall, lactiferous.

ch shrub 2.5 m. tall, mostly
defoliated by typhoon, (leafy twig
from different plant, not
much less exposed than
leafless ones).

1956 Ryukyu Is.

Aug. 9 - Sugama
in thickets mixed with
cultivated patches

3/5 38150 Euonymus japonicus Thunb.
occasional

7 51 (~~bamboo~~) Bambusa glaucescens (Willd.) Sieb. ex Munro
abundant

2 52 Commelina diffusa Burm.
occasional on edges of
cultivation

3 53 Wedelia chinensis Less.
on grassy banks

5 54 Thespesia populnea (L.) Sol. ex Correa
common

5 55 Cinnamomum japonicum Sieb.
common

2 56 Zephyranthes candida (Lindl.) Herb.
uncommon, edge of
wet place.

7 57 Polygonum barbatum L.
edge of wet place

5 58 Diospyros ferrea var. buxifolia (Rottb.) Bakhuizen
common

5 59 Ardisia sieboldii Miq
common

---

5 m.
↓

ok shrub 2 m. tall,
flowers greenish.

forming rather close
small clumps, culms
erect; green yellow when
completely mature; sterile.

decumbent, flowers
blue-lavender, 3 petals
equal.

decumbent, flowers
yellow.

ok small tree

shrub 2 m. tall,
somewhat fragrant
when crushed.

flowers white.

flowers white

small tree, 4 m. tall,
dark green, fruits
orange, edible.

small tree 3 m. tall,
branches articulate.
flowers pinkish white;
fruits globose immature.

Aug. 9 – head of lake
west of Kubakawa
muddy shore mixed
with rough limestone
boulders and outcrops.
Narrow fringe of mangrove,
mainly Bruguiera
Exoecaria, Kandelia, etc
with some grass,
probably Sporobolus
virginicus.
In places Kandelia, in
places Bruguiera forms
a belt on the portion
exposed by low tide. about 2 m. high
The substratum here
is generally rather
firm, clay with
considerable broken
finger-like coral,
and mostly probably
rather shallow, on
limestone base.
In places, especially
where crabs have
dug it up, it is soft
and sticky.
Back of the muddy
belt is another which
is firmer and covered
by Exoecaria and Pandanus
The rough boulders
have a community
of Limonium, Ischaemum

Carmona, etc. on
larger ones Ficus retusa.
Low thicket back of mangrove
of Pandanus, Derris trifoliata
Miscanthus, etc

Aug. 9.

(1)
Photo 14-4) Swordgrass, probably
Miscanthus sinensis,
rather pure stand,
1–2 m. tall.
Pandanus toward
sea.
Rock is apparently
close to surface
in some spots showing through.

On shores of little bay
below tops of rough
limestone cliffs covered
by Pandanus thicket
rocks below have
patches of Limonium
arbusculum, Ixeris sp.
Hedyotis, Ischaemum, some Ficus retusa
Scaevola, Messerschmidia
Pemphis (about 4 m. rather
high.), Indigofera liukiuensis,
silvery leafed prostrate legume.

away from sea Miscanthus gives way to patches of cultivation, patches of Miscanthus, Pandanus, small groups of Cycas, limestone outcrops with Ficus, Miscanthus, Cycas, Psidium, ~~etc~~ Toddalia, etc. All much browned by the typhoon except Pandanus

Aug. 9 - north side of Kubakawa tidal lake, narrow mangrove belt

38160 3 Lygodium microstachyum var. glabrescens Nakai
common in thicket at edge of
1 61 Callicarpa japonica Thunb.
rare in thicket at edge of
6 62 Kandelia kandel (L.) Merr.
dominant in most of
~~1~~3 63 Pemphis acidula Forst. f.
rare on limestone in edge of
5 64 Bruguiera conjugata (L.) Merr.
very common in
5 65 Pandanus tectorius var.
very common in thicket back of
5 66 Ficus retusa var. nitida Thunb.
on rough limestone boulders in edge of
3 67 Ficus erecta var. beecheyana F. erecta Thunb.
occasional in thicket on edge of
5 68 Phyllanthus
edge of cultivated ground outside of

Aug. 9 - 2 km. east of Hirara. Rolling grassland with very little Pandanus, on Miyako clay loam. A trailing Rubus, occasional Toddalia, and some small Camphor bushes, probably planted.

0-1 m.
↓

fronds twining in bushes.
low shrub, flowers lavender.
ok shrub 1.5 m. tall, flowers white
ok erect shrub 3 m. tall; flowers white.
ok shrub 1.5 m. tall, calyx red, / eaten by Miyako people.
shrub 2.5 m. tall, fruiting head orange red, oval, bases of phalanges swollen.
shrub, roots forming network over boulders, fruit dull pink.
Shrub 0.8 m. tall, fruit not quite mature

1956 Ryukyu Is.

38/69 Verbena officinalis L.
1 edge of cultivated field near
5 70 (~~acanth.~~) Justicia
edge of path into

Aug. 9 southwest of Tanami ‖
5 71 Nephrolepis exaltata
walls of excavation in
limestone
2 72 Oxalis corniculata L.
on bare ground along
trail in limestone soil
5 73 Malvastrum coromandelianum
M. tricuspidatum (Ait.) A. Gray
on bare ground along
trail in limestone soil

2 74 Cyperus rotundus L.
rare on bare ground
5 75 ~~asclep.~~ Parsonsia cumingiana A. DC
occasional in thicket on
limestone
2 76 Hedyotis albido-punctata (Merr.) Fosb.
common on rough
limestone just above
high tide level
1 77 Cocculus trilobus (Thunb.) DC.
rare on rough limestone
4 78 Cassytha filiformis L.
common on various
shrubs on limestone

Miyako I.

2 m. OK flowers lavender
2 m. flowers lavender

10 m.
+ fronds ascending
to erect.
OK flower yellow

much branched
depressed herb,
flowers pale dull
yellow
OK

Twining vine, flowers
pale green.

3 m.

Twiner, fruit turning blue
5 m.
OK stems green, flowers
and fruit white.

Aug. 10 - shrine south
of Sugama
grove consisting of
Casuarina
Garcinia
~~Calophyllum~~
Ficus retusa
Podocarpus
Persea?
Pinus
Some trees rather large
but grove much more
open than usual.

Aug. 11 Kasekhiya
coast of deeply eroded
and pitted hard limestone
Edges rather bare with
Limonium, Scaevola, Carmona,
Pemphis, Angelica, Ischaemum
Zoysia tenuifolia, Ipomoea
Messerschmidia, pes-caprae, Asparagus, Indigofera
Back of this a wide
belt of Pandanus scrub.
Casuarina here appear
dead.

Aug. 11 Minaai
Large irregular
grassy area is Miscanthus
and some Imperata —
looks like what would
be "rock-pasture" in Ishigaki
but not or scarcely

grazed. The stand of
grass is dense, of uneven
height, depending on
whether Miscanthus,
Imperata, or Panicum
repens is dominant and
whether there has been
recent cutting.
Locally Pandanus
Cycads, and other shrubs
are as abundant as
the grass. These mark
exposures of rock.
Thelypteris and
Lygodium are very
frequent, also Mallotus
japonicus, Toddalia,
Ficus erecta, Callicarpa,
Morus, Hibiscus tiliaceus,
Boehmeria sp. Carmona,
Dianella, Psidium
Eupatrium, Lippia, Wedelia
chinensis?, Rubus
locally scattered small pines

The soil filling the pockets
is gray-brown to chocolate
brown, fine, with
some limestone gravel.

1956

Aug. 10 – MCAT, 1 km. s. of Hirara

38179 Gardenia jasminoides var. grandiflora Nakai
3 planted on compound (what seems to be same seen wild)

Aug. 10 – Minaai
in rocky grassland with shrubs

3 80 Callicarpa japonica Thunb.
occasional det. H. N. Moldenke

3 81 Thelypteris
Cyclosorus acuminatus (Houtt.) Nakai
very common

4 82 Clematis tashiroi Maxim.
occasional

Aug. 10 – southwest of Kanechiya

2 83 Paederia
back of littoral thicket
~~[illegible]~~

2 84 Indigofera liukiuensis Makino ok
occasional on open pitted limestone just back of high tide level

Aug. 10 – 0.5 km. s. of Sugama
in patch of thin woods around shrine

3 85 ~~[illegible]~~? Machilus thunbergii S. & Z.

3 86 Morus australis Poir. var. glabra Koidz.

2 87 ~~Digitaria~~
Brachiaria subquadripara (Trin.) Hitchc. ok. A. Chase

40 m.
shrub 1.5 m. tall; flowers white, turning cream, very fragrant.

5 m.
↓
low shrub, flowers pinkish lavender.
all seen sterile, rhizome slightly buried.
climber

5 m.
↓
prostrate, foetid, sterile.

prostrate from tough root crown.

5 m.
↓
sterile tree leaves glaucous beneath.
small shrub, defoliated by typhoon; "kuwanoki" (J)
prostrate

Aug. 10 - limestone ridge
east of Hirara
Low vegetation - sward grass
and scrub mixed

f	Acacia confusa (scattered 1-2 m
c	Psidium
c	Mallotus japonicus
c~~o~~	"Bredynia"
a	low spiny Rosacea
c	Toddalia asiatica
a	Nephrolepis exaltata
c	Ficus erecta
a	Miscanthus
	Scleria sp.
o	Gardenia
c.	Ardisia
c~~o~~	Cinnamomum
c	Pandanus
o	Smilax sp.
r	apoc. vine. (shiny lvs.)
o	Ficus virgata
	Ficus retusa
o	Wikstroemia
l	Pouteria
r	Elaeagnus
lc ~~o~~	Raphiolepis
r	Camellia
lo	Pittosporum
o	Lespedeza cuneata
r	Morus
lo	Lysimachia mauritiana
lo	Cycas
r	~~Persea~~ ? Machilis?
lc	Thelypteris
	Hibiscus tiliaceus

In places Pandanus
is abundant. In places
small plantings of
Casuarina or Calophyllum

Aug. 10 - east of second
main ridge East of
Hirara
Here is an extensive
grassland on Miyako
clay loam soil
It is mostly Panicum
with occasional
admixture of Imperata,
a few clumps of Miscanthus.
Much of it has been
planted to seedlings
of Pine, Casuarina, camphor,
etc. In places these
are 1 m. tall, esp. the
Casuarina, locally 2-3 m.
mostly rather sparse
stand.
Panicum repens ("Hayakibi"?)
This grass has a thick knotty
very deeply buried rhizome.

1956

Aug. 10 - MCAT, 1 km. s. of Hirara — 40 m. ↓

38188 5 Morus australis Poir. var. glabra Koid.
planted around dwellings — small tree ~~[illegible]~~ 5 m. tall, defoliated by typhoon, then burst into flower.

3 89 Pilea microphylla Liebm. — ok — fleshy, spreading herb.
common in edge of lawn

Aug. 10 4.5 km. e. of Hirara
s. of Onoyama — 40 m. ↓
in open rolling grassland
on Miyako clay loam soil (acid)

6 90 Panicum paludosum Roxb. ok A. Chase
dominant

1 91 Setaria ~~A~~ pachystachys (Fr. & Sav.) Fr. & Sav. ex Matsum. det. A. Chase
rare

north of Yaabari
Aug. 10 2.3 km. e.s.e. of Hirara — 40-50 m. ↓
on low limestone ridge
with scattered brush

5 92 Setaria viridis (L.) Beauv. ok A. Chase
common at edges of cultivated patches

1 93 Emilia sonchifolia (L.) DC. — ok — flowers purple, slightly exceeding involucre.
infrequent at edges of cultivated patches

6 94 Nephrolepis cordifolia (L.) Presl — ok — fronds erect.
abundant on stone walls and outcrops

2 95 Dichondra — forming a thin mat; sterile!
on open Hydrocotyle almost bare ground

1 96 Cyperus ~~[illegible]~~ C. cyperoides (L.) O. Ktze.
occasional in grassy spot

1 97 Polygala japonica Houtt.
rare in grassy spot

2 98 Hibiscus tiliaceus L. — ok — shrub 1.5 m. tall, flower yellow, maroon center.
common in brushy patches

1956

38199 Fimbristylis dichotoma (L.) Vahl
2
occasional in grassy plac

38200 Youngia japonica (L.) DC.
1
occasional in protected grassy place

5 01 Raphiolepis liukiuensis (Koidz.) Nakai
common in low scrub

6 02 Ficus virgata Reinw.
rare on rough limestone ~~ledge~~ ledge

2 03 Gardenia jasminoides var. grandiflora
occasional

5, 04 Phyllanthus
Breynia

Aug. 11 - ½ mi. w. of Nagusuku

limestone knobs covered by scrub forest.

- Morus australis
- Melia azedarach
- Pandanus
- Mallotus (glaucous)
- Ardisia
- Ficus virgata
- Melanolepis?
- Ficus retusa
- Cinnamomum
- Ficus erecta
- Evodia
- Gardenia
- Macaranga
- Pterocarpus?
- Diospyros maritima

det. J. H. Kern

OK

shrub 1 m. tall;
fruit immature

OK shrub 1.5 m. tall,
fruit mostly immature,
reddish green when ripe.

Nakai shrub 1 m. tall, fruit
immature.

- Pouteria
- Asplenium nidus
- Flagellaria indica
- Croton
- Smilax
- Psychotria

This is a ragged degraded scrub forest apparently continuously cut over for firewood.

1956

Aug. 11
near east end

Fantastic landscape of rough limestone knobs and pinnacles, partly bare but largely covered by a low scrub of Raphiolepis, Carmona, Cycas, Ficus retusa, Pouteria, Pandanus, Ficus erecta, Croton, Sedum, Osteomeles, especially the low spiny rosaceae.

At the top of the seaward cliff and for a few m. back is a dense mat of Osteomeles and the spiny rosaceae spreading over the back slopes of the rim of the island

The intervals are filled by Imperata, Zoysia or Sporobolus, and small cultivated patches. Dianella forms small patches.
Near the cliff edge some of the other common shrubs, as Croton, Ficus retusa, as well as Crinum

are mixed with the Osteomeles mat.

Down at the base of the cliff is a talus of giant boulders covered by a mixture of Miscanthus and Pandanus, with a few cycads, some other shrubs in shelter of the boulders

The cliff itself is partially covered by a thin mat of Osteomeles, Ficus retusa, etc.

Some seaward slopes back from the cliff have a scrub of Scaevola, some Pittosporum, etc.

~~Arrangement on north side similar, belt of grass narrower. cliff has a mat of Pemphis, Lepturus, etc. on it.~~
~~Wave cut platform at base of cliff has many mushroom rocks,~~ larger of which are vegetated

Aug. 11 Henna Pt.

Flat limestone platform. Interior a mixture of Pandanus and grass.

South side has, at top of cliff, a belt of Zoysia and Sporobolus virginicus about 20 m. wide on thin soil on rough limestone. Cliff has no vegetation except grass Pemphis, sev. and Hedyotis on ledges.

Locally some Vitex on top, but this all killed at least to ground by typhoon. The grass turned rather brownish, even the Pandanus browned except actual bases of leaves.

Arrangement on north side similar but some additional species on cliff edge, grass belt narrower, cliff covered more or less completely by a mat of Pemphis, Lepturus, Osteomeles etc.

Wave cut platform at base with numerous mushroom rocks the larger of which

are vegetated with a mat of what appears to be Osteomeles or Pemphis, or both.

Separated from this by a channel is a roughly circular wave-cut platform with a band of mushroom rocks. Center may have been a shallow lagoon.

In the center of the plateau on the point are a number of enormous erratic boulders of limestone, the size of a house. The Pandanus scrub is sparse, with low Miscanthus in the openings.

Back toward the island are areas of grass on soil, Pandanus on soil and rock, and Osteomeles mat on rock.

Everything browned more or less by typhoon.

1956 Ryukyu Is.

Aug. 11 – Agari ~~K~~ H Henna ~~Z~~ Saki, east end of island

38205 Hemigraphis?
5 common at base of enormous limestone boulder.

2 06 Abutilon indicum ? (L.) Sweet
occasional among great limestone boulders

1 07 Asparagus cochinchinensis (Lour.)
rare on edges of ~~clif~~ limestone cliff

5 08 Sporobolus virginicus (L.) Kunth
dominant in open areas back of cliffs.

Aug. 11 northeast of Henna, east end of island on rough pinnacled pitted limestone.

09 (~~Asclep.~~) Tylophora tanakae Maxim.
common

5 10 Hedyotis albido-punctata (Merr.) Fosb.
common on vertical surfaces

11 ~~Ixeris~~ Crepidiastrum lanceolatum (Houtt.) Nakai
common on cliff edge

1 12 Asparagus cochinchinensis (Lour.) Merr.
rare on cliff edge

5 13 Croton cumingii M.-A.
common in low scrub

1 14 (~~Legum.~~! Galactia tashiroi Maxim.
common on cliff edge

15 Boerhavia diffusa L. sens. lat. det. FRF.
common on bare ~~tone~~ ledges

Miyako I.

22 m. prostrate; flowers white.

↓

SR

depressed much branched suffrutescent herb.

Merr.

— procumbent; leaves fleshy.

Kunth or R. [illegible]

forming a deep mat.

20-30 m.

twining vine, flowers yellow-green, (rarely flowering)

— prostrate, sub-fleshy.

leaves glaucous; flowers yellow.

depressed shrub.

prostrate

prostrate, flowers pinkish!

1950 Ryukyu Is.

38216 (~~lit.~~)
1 occasional in soil between boulders
2 17 (Psychotria serpens
{ rare Tylophora hispida Decne ? T. tanakae Maxim.
5 18 Antidesma pentandrum var. barbatum (Presl) Merr.
common
4 19 Osteomeles ~~anthyllidifolia~~ subrotunda C. Koch
abundant on rocks near cliff edge

Aug. 11 - ~~1/3~~ 0.7 km. w. of Aragusuku
in secondary scrub on hill of limestone
5 20 Croton cumingii M.-A.
occasional
4 21 (~~[illegible]~~) Fatoua villosa (Thunb.) Nakai
rare
1 22 Commelina auriculata Bl.
rare ~~in~~ at edges of
5 23 Morus australis var. glabra Koidz.
occasional

Aug. 13 - MCAT Compound, 1 km. s. of Hirara
5 24 Diospyros ferrea var. buxifolia (Rottb.) Bakhuizen
planted

---

prostrate.

shrub up to 1 m. tall; flowers green.
— prostrate shrub, forming dense mat; fruit black when ripe.

55 m.
↓

shrub 1 m. tall

herb 0.7 m. tall, branched;
— stigmas purple.
prostrate; flower white.

shrub 1.5 m. tall.

40 m.

small tree 4 m. tall; leaves stiff, dark green, glossy; fruit orange when immature, dark brownish red when ripe, edible, with sweetish thin flesh.

1956

Aug. 14 – Sugar mill 0.8 km s. of Kaamichi

Large area of grassland on low land with drainage ditches. The grass is largely Imperata, Setaria viridis Ischaemum sp., Paspalum orbiculare, Panicum repens. Some weeds such as Conyza. Scattered clumps of Pandanus "Breynia", with some Psidium Morus, Ficus erecta, Toddalia, Macaranga etc. and scattered Erythrina trees.

The Breynia and associated species, and ~~especia~~ some Miscanthus especially lining drainage ditches.

In wet places Fimbristylis of 2 spp., here Ischaemum ~~and~~ Paspalum & Panicum predominate, also Isachne. Additionally there are a few minor grasses and reeds.

In the running water of the ditches is a large sterile Eleocharis

The soil is a stiff clay with ~~f~~ cobble-sized

limestone fragments in it.

The grass in this area is harvested for fodder and the Imperata apparently comes into flower after ~~a~~ the above-ground part has been cut – perhaps the same reaction as that after burning in other places (here as well?)

Aug. 14 - Sugar mill
~~[illegible]~~ 0.3 km. s. of ~~Kaamichi~~
Kawamitsu

in grassy area of low
heavy soil, marshy in
places, being drained.

3 38225 Phragmites karka (Retz.) Trin.
5 scattered in wet spot
1 26 Isachne globosa (Thunb.) Kuntze
abundant in wet places
5 27 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
common in wet places
5 28 Fimbristylis monostachya (L.) Hassk.
very common in wet places
7 29 Imperata cylindrica (L.) Beauv.
dominant on most of
the dryer places
4 30 Paspalum orbiculare G. Forst.
common in wetter places
5 31 Ischaemum crassipes var. formosanum
abundant in wetter places
2 32 ~~Themeda~~ Apluda mutica L.
occasional around thickets
2 33 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
occasional around thickets
2 34 Eleocharis caribaea (Rottb.) Blake
rare in wet place

same - waste places
around mill
5 35 ~~Themeda japonica~~
roadside
5 36 Cyperus compressus L.
local in desiccating pool

2-3 m.
~~3-4 m.~~

ok A. Chase erect canes up to
— 3-4 m.! tall.
mostly sterile

det. J. H. Kern caespitose

ok A. Chase

ok A. Chase

(Hack.) Nakai det. A. Chase fertile culms erect.

ok A. Chase glaucous

det. H. Svenson

4
~~3~~ m.
— Apluda mutica L. ok A. Chase

ok

1956

38237 Digitaria
4 locally common

5 ~~3~~8 Corchorus acutangulus Lam.
local

3 39 Portulaca oleracea L.
local

2 40 Acalypha ~~lanceolata~~ A. australis L.
rare in cultivated ground

5 41 Amaranthus spinosus L.
locally common

Aug. 14 near Matsubara
Cultivated ground.
Hedgerows principally
Ardisia sieboldii (?)
with Polypodium scolopendria, Asplenium nidus,
Thelypteris sp., Ficus
erecta, Wikstroemia,
Raphiolepis, "Breynia",
Acacia confusa, Pittosporum;

Ageratum - kako azami
Amaranthus - inobio

Aug. 14 - 0.5 km. s.e. of Matsubar
in an around cultivated
fields on limestone or limestone soil.
2 2 42 Cycas revoluta Thunb.
common

4 m. culms decumbent;
↓ — leaves glaucous!
depressed diffusely
branched herb;
OK flowers yellow.
— fleshy, prostrate

3 m thick-stemmed much-
branched erect herbs, to
~~1~~ 0.7 m. tall.

These hedgerows are
on low walls of coral
cobbles, picked up from the
fields. On the low
hills, which are outcrops
of limestone, in this
area the vegetation is
principally Pandanus
scrub 1-3 m. high.

15 m.

OK shrub 1 m. tall, leaves
spreading to ascending,
stiff; carpels incurved,
forming a head-like structure
with the orange-red seeds
loosely held within it.

1956 Ryukyu Is.

38243 Sporobolus elongatus
6 in grassy place

5 44 Eclipta alba Hassk.
in shallow ditch

2 45 Oxalis corniculata L.
in ~~[illegible]~~ bare ground

1 46 Synedrella nodiflora Gaertn.
in ~~[illegible]~~ cultivated land

47 Cardiospermum halicacabum L.
in sweet potato patch

3 48 Urena lobata L. var.
very local ~~in~~ on rough limestone

2 49 Solanum aculeatissimum Jacq.
occasional

5 50 Euphorbia heterophylla L.
common locally

3 51 Polypodium scolopendria
common in stone walls

1 52 Mollugo pentaphylla
5 rare in path

5 53 Amaranthus gracilis Desf
1 54 Ageratum conyzoides L.
cultivated fields

2 55 Centella asiatica (L.) Urb.
common

4 56 (~~[illegible]~~) Phyllanthus
occasional in open bare ground

2 57 (~~grass~~) Leptochloa panicea (Retz.) Ohwi
occasional in open bare ground

1 58 (~~Asclep.~~) Tylophora tanakae Maxim.
on stone wall

5 59 ~~Andropogon~~ Cymbopogon tortilis (Presl) Hi.
common in rocky place

1.5 m

OK A. Chase

OK flowers white.

OK

OK flowers yellow.

— Sm. microcarpum (Hbk.) Bl.
flowers white.

shrub 1.5 m. tall; sterile.

OK herb to 1 m. tall (in shade);
— fruit scarlet.

OK flowers green, base of bract, scarlet.

Microsorium scolopendria (Burm.) Copel.

flowers whitish

— "inobio" (?) said to be edible.

OK flowers white; "kakoazami" (?)

OK stems prostrate, superficial.

OK A. Chase

flowers yellow-green.

Camilla A. Chase OK culms erect.

1956

Phyla nodiflora (L.) Greene

38260 Lippia nodiflora L.
5
very common

5 61 Lespedeza striata (Thunb.) H. & A.
local on hard ground

same – in old quarry
in loose-textured coral limestone

5 62 Pteris (or Lindsaya) P. vittata L.
common on walls

5 63 Adiantum capillus-veneris L.
common on walls

5 64 Thelypteris Cyclosorus acuminatus (Houtt.) Nakai
common on floor

1 65 Cyrtomium falcatum (L.f.) Presl
rare on walls

5 66 Asplenium nidus L.
common on walls

MIYAKO

prostrate; flowers
pinkish white.

ok

prostrate; flowers
bright rose purple.

10 m.
↓

Pteris ryukyuensis Tagawa det C V Morton

ok

rosette, accumulating
dead leaves in center.

1956

Aug. 14 – The damage to vegetation that resulted from typhoon Wanda, July seems to have been principally defoliation and the killing of small twigs, probably resulting from salt spray. The fact that this is evident even in the interior of the island, however, suggests that simple evaporation may have been somewhat responsible. Casuarina was browned a good bit especially near the sea. Erythrina, Morus, Melia, Breynia, Excoecaria, Ficus wightiana, Leucaena were almost uniformly and completely defoliated. Morus and Excoecaria promptly burst into flower.

By a week after the typhoon Breynia was putting out an abundance of new leaves. A few days later Erythrina and Morus were doing the same, and Melia to some extent.

In all, very few trees were blown down, only a few young Casuarina. Many limbs were blown off the Casuarina.

Pandanus showed little damage of any sort except that in the most exposed places a good many leaves were broken. Agave showed no damage except broken flower stalks. Calophyllum showed little damage except some browning of leaves near the sea. Miscanthus, where exposed to salt spray, shows conspicuous browning.

1956

Aug. 15 – Typhoon Babs came up rather suddenly, developing over night from a rather gusty "tropical storm". During day the wind rotated from northeast to beyond southwest, and reached a strength of perhaps 50 knots with gusts to 70 knots. with considerable but not heavy rain.

There is little damage evident in inland areas as yet.

At the beach near Nibsadora, where there is an enormous dune ridge, largely covered by Pandanus, sand and salt spray are blowing in large quantities and with great force. The water that blows in horizontally from the sea is, by taste perhaps one third seawater. ~~Inland~~, Behind the main dune ridge so much fine wet sand has blown in that the plants are covered by it as by

wet snow after a light wet snow-storm. This sand is so fine that there is as yet no obvious damage from it, though it definitely stings the bare legs. Some waterlogging of leaves is evident in exposed places in Scaevola, Wikistroemia and even Calophyllum. None in Pandanus, though.

Casuarina trees are whipping around, but none seen uprooted and only a few broken limbs.

Aug. 16 – just s.e. of Tomori [Tomori]

(3) (Photo 848-138) broken land, partially cultivated, some Miscanthus, many rough pinnacles with Pouteria, Ardisia, Pandanus, Cycas, spiny rosaceae, Kalanchoe, Polypodium scolopendria, Raphiolepis, Nephrolepis, Pittosporum, Pleioblastus, Macaranga, Croton, Murraya, Evodia, Ficus retusa, F. wightiana, Derris trifoliata, Canavalia, Boehmeria, Morus, Bischofia, Ehretia, Crinum, Carmona, Ficus virgata, F. erecta, Toddalia, etc. "Breynia"

The knobs are in place built up with rough cobbles picked up from the cultivated patches. Terracing is intricate and ingenious. Some cultivated patches very small.

Aug. 16 – 1.3 km. n.e. of Tomori on rough limestone outcrops

38267 Smilax sebeana Miq. : det. T. Koyama 1959
7 occasional

5 68 Psilotum nudum (L.) Griseb.
occasional on exposed limestone

Aug. 16 1.3 km. n.e. of Tomori

(4) (Photo 848-138) broad ridge with knobs and pinnacles of limestone and clumps of Pandanus, grass patches of Pine, cultivated patches, etc.

Knobs here have Toddalia, Ficus erecta, F. wightiana, Cycas, spiny ~~Rhamnus~~, Raphiolepis, Pittosporum, Nephrolepis, Pouteria, Ardisia, Ficus retusa, Gardenia, Dianella, Morus, Ampelopsis, Polypodium scolopendria, Cinnamomum, Pandanus, "Breynia" Kalanchoe, Derris trifoliata, Carmona, Callicarpa, Psilotum, Miscanthus, Smilax.

The grass between them is largely Imperata with some Miscanthus.

85 m. ↓ vine, fruit green.

OK

1956 Ryukyu Is.

7 9 2 69 Derris trifoliata Lour.
3 common

5 70 ~~Rhamnus~~ Sageretia theezans (L.) Brongn.
abundant

Aug. 16 - just s.e. of Tomai
on and around rough
limestone outcrops.

1 71 Sesamum indicum L.
persisting in field after harvest

5 72 Lysimachia mauritiana Lam.
on bare cultivated ground

2 73 Canavalia turgida Graham
on brushy pinnacle

3 74 Murraya paniculata (L.) Jack
in scrub

5 75 ~~Evodia~~ Melicope awadan (Hatus.) Ohwi ex Hatus.
in scrub

2 76 Pleioblastus gramineus (Bean) Nakai
common locally on
outcrops in soil pockets

3 77 ~~(Bupleurum)~~
local on soil

Aug. 17 MCAT Compound,
1 km. s. of Hirara
weeds in lawn

5 78 Euphorbia prostrata Ait.

3 79 ~~Leucas~~ E. thymifolia L.
rare

3 80 Plantago ~~major~~ P. asiatica var. densiuscula Pilger

5 81 Echinochloa colonum (L.) Link
common

---

85 m. OK
↓

tangled in scrub; buds
pinkish at tips.

prostrate; fruit immature

40 m.
↓

OK flowers white.

OK compactly branched;
flowers pinkish white.

OK twining vine; pods
inflated.

OK shrub 2 m. tall;
flowers white.

shrub 2 m. tall;
buds white; fruit immature.

det. F. A. McClure canes green, turning
yellow, 1-2 m. tall
in small clumps; sterile.

prostrate; flowers purple.

40 m.
↓

prostrate, purplish.

stems decumbent; flowers
white

OK A. Chase culms ascending

Aug. 19 - northeast of ~~beyond~~ Higa

Extensive ~~p~~ rolling plateau covered by an uneven mixture of Imperata and Miscanthus sinensis (?), with numerous rough limestone outcrops. Some patches of small plantation of Casuarina, pine and Acacia confusa. Limestone outcrops with Toddalia, Rhamnus, Raphiolepis and accompanying shrubs. Many sink holes. Some cultivation.

Steep slopes from limestone cliffs down to seashore.

Cliffs at top are steep and overhanging. Resting on Shimajiri clay. Springs at contact.

Cliffs have Ficus retusa, Toddalia, Macaranga, Morus australis, Rhamnus, Ficus erecta, Pandanus etc.

Contact strongly recessed and with water dripping from limestone.

Slope below a talus at about 30-45° slope, dominated by Miscanthus

but with abundant shrubs - Pouteria, Euonymus, Pandanus, Ficus retusa, Antidesma, Evodia, Cansjera, Morus, Toddalia, Ficus erecta, Ficus retusa, Mallotus japonicus, etc.

Slope is of clay with abundant limestone boulders. Mud slumping evident and ravines cut into slope.

The proportion of shrubs to Miscanthus varies greatly. The Miscanthus is a very narrow-leaped form, scarcely or not scabrous.

1956

Aug. 19 - 1.3-1.5 km. n.e. of Higa

on edge of limestone cliff

3 8282 Crinum asiaticum var. japonicum Baker
2 occasional

5 83 Leucas
common

3 84 Ficus pumila L.
common

on grassy plateau,
clay soil over limestone

2 85 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
occasional

3 86 Setaria viridis (L.) Beauv.
common locally

1 87 (~~Rapum~~)
rare

5 88 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
common locally

on steep slope over sea,
clay soil with coarse grass and shrubs

2 89 Alpinia speciosa (Wendl.) K. Schum.
common

2 90 Mallotus japonicus M.-A.
common

5 91 ~~Evodia~~ Melicope awadan (Hatus.) Ohwi & Hatus.
common

1 92 Leucas
at foot of cliff

60 m.
↓

flowers white, with a heavy fragrance; filaments and style maroon purple.

sprawling; flowers white.

OK stems ascending; sterile.

flowers violet, wings curving in at tips.

OK herb 1 m. tall, ripe fruit orange-red, ribbed.

30 m.
↓

OK shrub 1.5 m. tall, badly battered by typhoon.

shrub 1.5 m. tall, flowers white; fruit immature.

40 m. flowers white.

1956

F. erecta Thunb.

38293 Ficus erecta var. beecheryana

3 common

~~94 Euonymus~~

5 94 Euonymus japonicus Thunb.

common

2 95 Hibiscus abelmoschus L.

local Abelmoschus moschatus Medic.

3 96

common at base of cliff

2 97 Vitis

occasional

3 98 Callicarpa japonica var. luxurians Rehd.

occasional

Aug. 20 – MCAT Compound, 1 km. s. of Hirara

weeds in and around lawn

3 99 Chrysopogon aciculatus

38300 Emilia sonchifolia (L.) DC.

2

~~D.~~ violascens Link

2 01 Digitaria ~~chinensis~~

5 02 Justicia procumbens

common

---

30 m. shrub 1.5 m. tall,

↓ ripe fruit purple, edible

but rather tasteless.

ok shrub 2 m. tall; fruit green.

herb 1 m. tall, branched, fruits dry.

40 m. flowers lavender.

30 m. climbing vine, sterile.

↓

det. H. N. Moldenke ~~fls~~ weak shrub; flowers lilac.

40 m.

↓

Rhaphis aciculata (Retz.) Desv.

ok scapes stiffly ascending. leaves firm, very slightly glaucous; flowers bright purple, ~~somewhat~~ exceeding involucre.

OK A. Chase culms spreading to somewhat ascending.

much branched bushy herb, flowers white, lip streaked with purple.

1956

Aug. 20 - east of Hirara

Low ridge with Casuarina plantation on slopes, Pandanus scrub on top.

Pandanus scrub is a mixture, principally Pandanus, but with many other plants:

Pandanus tectorius
Hibiscus tiliaceus
Miscanthus
Callicarpa sp.
Rhamnus sp.
Toddalia asiatica
Morus australis
Acacia confusa
Elaeagnus sp.
"Breynia"
Bauhinia sp.
Wikstroemia
Carmona retusa
Psidium guajava
Vitis sp. (not lanata)
Ficus erecta
Raphiolepis
Cycas revoluta
Cinnamomum
Gardenia
Mallotus japonicus
Ardisia
Clematis tobira
Pittosporum

Psychotria liukiuensis
Vitis lanata
~~Phyllanthus~~ Securinega
Boehmeria
Ampelopsis
Smilax
Nephrolepis
Ehretia

Where undisturbed this is an impenetrable tangle about 2 m. high, with Acacia and other trees as emergents.

Farther east is a large pine plantation — trees about 4-5 m. tall, up to 6-8 cm. diam. These are rather irregularly spaced and there is a thick understory of Pandanus with many secondary shrubs.

Deep many brown soil with no limestone

Cinnamomum camphora
Raphiolepis
Osbeckia chinensis
Psidium
Toddalia
Gardenia
Mallotus japonicus

Aug 20 ~~[illegible]~~ west of ~~Rinpa~~ Nakazone

rounded grassy hills between rice patches.

Imperata grassland with ~~abundant~~ sedges, Rhynchospora rubra, Fimbristylis 3 spp., Ischaemum, Wedelia chinensis, Centella, Lespedeza cuneata, some shrubs on steep slopes.

Lygodium flexuosum

Here and there are protrusions of limestone but not abundant.

Aug. 20 – 0.5–1 km. west of ~~Rinpa~~ Nakazone

low grassy hills of clay between rice fields. 20–30 m.

38303 Rhynchospora rubra (Lour.) Makino ok
7 abundant

3 04 Andropogon caespitose, erect.
occasional

5 05 Ischaemum crassipes var. formosanum (Hack.) Nakai decumbent, tips ascending
common

5 06 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
common

5 07 Fimbristylis " " "
common

3 08 Fimbristylis " " "
common

3 09 Imperata cylindrica (L.) Beauv. ok A. Chase flowering in areas where it has been cut for fodder.
dominant

2 10 Lespedeza cuneata G. Don ok — sterile, apparently diseased.
common

an erosion scar shows this to be weathered Shimajiri clay, with concretions, etc. and spots where it is not weathered much.

1956

Aug. 20 – ridge 1.5 km. east of Hirara in Pandanus scrub on limestone 10 m.

38311 5 ~~Raphis~~ Nephrolepis exaltata (L.) Schott
very common ~~on limestone~~

2 12 Callicarpa japonica Thunb.
occasional

5 13 Cinnamomum japonicum Sieb.
common

2 14 Macaranga tanarius (L.) M.-A. OK
occasional.

4 15 Callicarpa japonica Thunb.
occasional det. [illegible]

5 16 Psychotria liukiuensis
common locally

1 17 Raphiolepis liukiuensis (Koidz.) Nakai
rare

1 18 Callicarpa japonica Thunb.
rare

1 19 Vitis Ampelopsis brevipedunculata Trautv.?
rare

1 20 Conyza canadensis (L.) Cronq. Erigeron bonariensis L.
occasional along road

2 21 Leucaena glauca (L.) Benth. OK
occasional

2 22 Toddalia asiatica Lam. OK
~~com~~ very common

2 23 ~~Phyllanthus~~ Securinega fluggeoides M.-A.
common

5 24 Phyllanthus [illegible]

MIYAKO

fronds erect or almost so

low bush 0.6 m. tall;
flowers lilac.

shrub 1 m. tall, ~~[illegible]~~
aromatic when broken;
leaves not glaucous beneath.

shrub 2 m. tall, sterile.

shrub 3 m. tall; flowers
lilac.

shrubs 1 m. tall;
flowers greenish white;
fruit immature

shrub 1 m. tall, fruit black.

almost prostrate shrub;
flowers lilac.

vine, climbing in
bushes, sterile.

shrub 2 m. tall.

scandent shrub;
buds only.

shrubs 2 m. tall
flowers white.

1956

Aug. 20 - 3.2 km ~~~~ by n. of Hirara, s.w. of Nakazone young pine forest on rolling clay hills. 30 m. ↓

37325 Raphiolepis liukiuensis (Koidz.) Nak
5 common

2 26 Mallotus japonicus M.-A. ok
very common

(Melastoma candidum var. nobotan (Bl.) Makino
f 5 27 ~~Osbeckia chinensis~~
common

3 28 Cinnamomum camphora ok
common (Nees & Eberm.

~~2~~ Aug. 21 - 3.7 km. e. of Hirara

low clay hills covered by a secondary (old field) scrub about 1-2 m. tall, sparse, mixed with Miscanthus, sparsely planted with young pines 2-4 m. tall, or locally Casuarina.

shrubs seen:
Gardenia
Schima
Podocarpus
Elaeagnus
Mallotus japonicus
Cinnamomum camphora
Raphiolepis
Pandanus

- shrub 1 m. tall, fruit black.
- shrub 1 m. tall (all seen about this height); flowers cream white.
- shrub 0.8 m. tall; fruit immature.
- shrub 2 m. tall, compactly branched, strongly aromatic; leaves glaucous beneath; sterile.

Ficus erecta
Lauraс. (Persea-like)
Osbeckia chinensis
Cinnamomum japonicum?
"Breynia"
Toddalia asiatica
Carmona retusa
Ardisia

Nephrolepis and sedges are common

Callicarpa
Morus
Antidesma
Ficus virgata

Nakazone
Aug. 21 beyond ~~Pinza~~

Slope down to sea is about 25° - littered with great limestone boulders.

Vegetation a mixture of Miscanthus - 2½ m. tall, patches of Imperata, and shrubs 2-3 m. tall -

Ficus wightiana
Gardenia
Morus
"Breynia"
Ficus erecta
Hibiscus?
Macaranga Phragmites
Toddalia Pandanus

At the top is mainly Imperata but with some Erythrina and shrubs on limestone outcrops

A deposit of shiny sand a few yards square on the rim. Possibly brought there

On the way up on the land side the road is cut 2 m. into a finely bedded sand with layers of stiff gray clay and of soft black pebble-like concretions.

1956

Aug. 21 – 1 km. e.s.e. of ~~Pinfa~~ nakasone
in thicket at edge of cultivated
ground, fine sandy soil.

38329 Sambucus chinensis Lindl.
4 common at edge of thicket
2 30 Pouzolzia indica var. alienata (L.) Wall.
rare at edge of road
2 31 Boehmeria nivea (L.) Gaud.
common

same – on clay slope with limestone
boulders, leading down to
sea, mixed tall grass,
short grass and bushes.

2 32 Hibiscus mutabilis L.
occasional
5 33 Ficus ~~wightiana~~
very common
F. superba var. japonica Miq.
5 34 Morus australis var. glabra Koidz.
common

same – edge of ditch in cultivated ground
5 35 Cyperus eleusinoides ~~Hall~~ Kunth OK
36 Abutilon indicum (L.) Sweet J.H. Kern

Aug. 21 3.5 km. east of Hirara
~~on~~ in secondary scrub
~~with~~ on low clay hills.

3 37 Nephrolepis exaltata (L.) Schott
very common on ground
5 38 Ficus erecta Thunb.
very common

---

50 ~~30~~ ~~40~~ m.
↓

herb 1 m. tall; flowers
white, glands yellow.
prostrate
OK weak shrub, branches
ascending to drooping.

30 m.
↓

OK shrub 2 m. tall, sterile.

shrubs 2-3 m. tall, lactiferous;
2 plants represented,
one with white stipules, one
with immature fruit.
shrub 1.5 m. tall,
fruit green, turning pinkish.

40 m.
↓

erect, solitary
erect herb 1.8 m. tall.

35 m
↓

fronds erect.
OK shrub 1 m. tall,
ripe fruit dark purple.

1956

38339 Schima liukiuensis Nakai
5 very common

3 40 (Laurac.) Machilus thunbergii S. & Z.
common

1 41 ~~Psychotria~~ Randia?
rare

5 42 Antidesma pentandrum
occasional var. barbatum (Presl) Merr.

Aug. 22 - Air Force Establishment
small limestone
hill covered by a coppice
like scrub of Cinnamomum
Ardisia, Pouteria, Arenga
with 4 tall Livistona
growing up out of it.
These have the stiffly
ascending straight
panicles of the Ishigaki
plants. Leaf tips scarcely
drooping. No fruit or
flowers. Many young
plants.

Aug. 22 - Air Force Establishment;
Nubaru Dake
open waste ground around building

5 43 Paspalum urvillei Steud. A. Chase
common

3 44 Eleusine indica (L.) Gaertn. "
common

3 45 Dactyloctenium aegyptium (L.) Beauv. A. Chase

---

shrub 2 m. tall,
fruit immature.
shrub 2 m. tall. leaves
glaucous beneath,
disagreeably aromatic
when broken, sterile.
shrub 1 m. tall,
shrub 1.5 m. tall; flowers
yellow-green; fruit
reddish black when ripe, com.

erect

culms spreading, ascending.

culms prostrate

38346 Apium leptophyllum (Pers.) F. Muell
2 occasional

~~Ap~~ Aug. 22 – 1 km. s.e. ~~east~~ of Hirara
on walls and floor of excavation in coral limestone. 20 m. ↓

5 47 Pteris vittata L.
common

2 48 Nephrolepis bisserrata (Sw.) Schott
common

1 49 (Lab.) Teucrium viscidum var. miquelianum (Maxim.) Hara
rare on floor

1 50 Plantago ~~rugelii~~
rare on floor P. asiatica L.

Aug. 23 – 0.4 km. ~~[illegible]~~ n.w. Moteka
scrub forest on walls of ravine –
Erythrina
Melanolepis
Macaranga
Pandanus
Cycas
Morus
a Bischofia
Canna
Alocasia
Mallotus japonicus
"Breynia"
Ficus virgatus
Mallotus (glaucous)
Ardisia
Asplenium nidus

pendent from walls (also erect on floor)

Gardenia
Murraya
Cinnamomum japonicum
Ficus wightiana Pittosporum
Gardenia
Antidesma Pisonia umbellifera
opp. lf. trifoliate tree
Ficus retusa
Crataeva
Diospyros maritima
Randia?
Wikstroemia
Psychotria
Maesa
Mallotus ~~phi~~ philippinensis
Melia
Solanum sp.

1956

Aug. 23 – 0.5 km. s. of Kumadake ~~n.w. of Motoba~~
along stream.
in degraded scrub forest
on limestone walls of ravine

3 38351 Mallotus philippinensis (Lam.) M.–A.
rare

2 52 Flagellaria indica L.
occasional

3 53 Nephrolepis biserrata (Sw.) Schott
on rough limestone
boulders

3 54 Nephrolepis biserrata (Sw.) Schott
on overhanging rough
limestone boulders

2 55 ~~Aporosa~~
rare Bridelia ovata Decne ?

3 56 Microlepia strigosa (Thunb.) Presl [illegible] V. Morita
common

2 57 Psychotria
common in undergrowth

1 58 Melanolepis multiglandulosa (Reinw.?) Zoll.
common

7 59 Maesa tenera Mez
abundant in undergrowth

2 60 Psychotria
common in undergrowth

2 61 ~~Mallotus?~~
common in undergrowth
Alchornea trewioides M.-A. var. formosana Pax
trewioides

2 62

in openings on bare limestone

45 m.

↓

shrub 3 m. tall; sterile.

OK. vine climbing in trees;
sterile.

arching, tending to droop.

fronds pendent
(presumably the same
as #38353)

shrub ~~3~~ 2 m. tall, leaves
slightly glaucous
beneath, ~~sterile~~ appearing
distichous; sterile.

shrub 1 m. tall; fruit
immature.

shrub 3 m. tall

weak sprawling
shrub, fruit immature.

shrub 1 m. tall;
fruit turning yellow.

shrub 2 m. tall; leaves
glaucous beneath,
petioles red; sterile.

prostrate herb; sterile.

1956

38363 Solanum verbascifolium L.
6 common

7 64 ~~Randia (or Psilotte?)~~
rare

5 65 Ficus virgata Reinw.
~~[illegible]~~ common

2 66 Diospyros maritima Bl.
common

6 67 Wikstroemia retusa A. Gray
occasional in open places

6 68 Mallotus japonicus M.-A.
common, especially
around openings

5 69 Turpinia trifolia
common T. ternata Nakai

4 70 Bischofia javanica Bl.
abundant, ~~common~~
comprising a large
proportion of the forest

4 71 Pisonia umbellifera (Forst.) Seem.
occasional

~~3 72 Crataeva religiosa~~
~~occasional~~

3 72 Crataeva religiosa Forst.
occasional

Liodendron matsumurae (Koidz.) H. Keng

5 73 ~~Ilex~~?
common

Aug. 27 – 4 km. s.e. of Hirara,
in cultivated ground

1 74 Verbena officinalis L.

5 75 Melochia ~~M.~~
common M. corchorifolia L.

shrubs 2-3 m. tall;
flowers white.

shrub 1 m. tall; fruit
immature.

small tree 5 m. tall.
figs turning red.

small tree; sterile.

shrub 2 m. tall,
leaves young; buds green.

shrub 1 m. tall,
stigmas yellow to red.

tree 6 m. tall; fruit
immature

tree 6 m. tall; fruit
brown

small tree 4 m. tall
(badly beaten by typhoon);
flowers greenish white,
just opening.

shrub 2 m. tall,
petioles and veins
purple (young leaves);
sterile

tree 6 m. tall; sterile

n. of Zumori
50 m.

flowers rose purple.

flowers rose purple

Aug. 23 - "Colonel's Beach",
O Saki
on sand dunes 6 m.
38376 Lepturus repens var. subulata Fosb. tufted. with runners.
5 common
7 77 Thuarea involuta (Forst.) R. & S. OK prostrate, forming mats.
common

same - on rough limestone cliffs facing sea.
1 78 Adiantum capillus-veneris L. 3 m.
in crevices
4 79 Limonium arbusculum (Maxim.) Makino 2 m. OK
common just above high tide level
1 80 Adiantum capillus-veneris L.
on cieling of cave
2 81 Hedyotis albido-punctata 2 m prostrate, fleshy.
common just above
high tide level
2 82 Lepturus repens var OK 2 m
just above high tide level

same - on sand dunes
1 83 Euphorbia chamissonis 5 m prostrate
occasional E. atoto Forst.
1 84 Leucas 5 m. prostrate, flowers white.
occasional
84a Maytenus? Gymnosporia diversifolia Maxim. depressed shrub; flowers white.
common

Aug. 24. base of Iri-Henna-Misaki,

small finger-like limestone peninsulas - remnants of a dissected 3 m. (or more?) platform extremely rough.

Fine coarse sand soil in pits and basins.

Here are a Scaevola
a Zoysia tenuifolia,
la Lepturus repens
a Limonium arbusculum
f Hedyotis albido-punctata
c Messerschmidia
f Asparagus
c Vitex
c Angelica ? (dry & shattered)
la Sesuvium
la silvery leafed prostrate legume

This lines the entire coast here.
Back of it is solid Pandanus

Aug 24 north of Karimata

scrub forest on limestone ridge

stature about 6 m.

main layer (Pandanus absent)
Diospyros maritima
Ardisia
Ficus wingata
Pouteria
Ficus retusa
~~[illegible]~~ Celtis
Diospyros ferrea
Garcinia
Turpinia

Erythrina
Pterocarpus

Undergrowth
Diospyros maritima
Croton
Psychotria
Antidesma
Ardisia

Lianes
Flagellaria
Smilax
Epipremnum
Piper
Vitis

Epiphytes (also on rocks)
Asplenium nidus

no ground cover except sparse Piper here and there

1956

Aug. 24 – 0.5 km. n. w. of Karimata
in dense scrub forest on limestone ridge

38385 Piper kadsura (Choisy) Ohwi
2 common, mostly on ground

~~86 Abutilon~~

2 86 Elaeagnus macrophylla Thunb. ?
common in edges and along paths

5 87 Antidesma pentandrum var. barbatum (Presl) Mer.
occasional in undergrowth

5 88 Cinnamomum japonicum Sieb.
occasional

(Ampelopsis brevipedunculata Trautv. ?

2 89 Vitis
common

6 90 ~~Pterocarpus~~? Pongamia pinnata (L.) Merr.
occasional

3 91 Alpinia chinensis
common

3 92 Ilex ?
common

3 93 Celtis ? Morus australis var. glabra Koidz.
~~c~~ common

94 Abutilon indicum (L.) Sweet
weed by roadside

Aug. 24 – 1 km. n. w. of Karimata
in Pandanus scrub on coral cobble ridge

5 95 Pandanus
dominant

3 96 (~~Lil.~~)
common locally

20-30 m.

sterile creeper.

scandent shrub; sterile

shrub 2 m. tall, flowers
— pale green.

ok

shrub 2 m. tall (others seen to 5 m.); fruit
— immature.

vine, climbing in undergrowth; sterile.

— tree 8 m. tall; leaves
beaten by typhoon
new; flowers rose pink, rather unpleasantly
— fragrant.

rhizome aromatic;
— fruit immature.

tree 4 m. tall, sterile.

tree 6 m. tall, widely
— spreading, leaves new; sterile.
flower orange

3 m.

shrub 2 m. tall, fruit
— head subglobose, orange.
flowers bright lavender.

1956 Ryukyu Is.

Aug. 24 - base of Iri-Henna-Misaki Peninsula, 1.7 km. n.w. of Karimata
on extremely rough pitted limestone platform

38397 (~~Leg.~~) Galactia tashiroi Maxim.
6 common
5 98 Asparagus cochinchinensis (Lour.) Merr.
common, rooted deep~~ly~~ in pits.
4 99 Limonium arbusculum (Maxim.) Makino OK
very common
38400 Hedyotis albido-punctata
5 very common
2 01 Messerschmidia argentea (L.f.) Johnst. OK
occasional
5 02 Sesuvium portulacastrum L. OK
common

• Aug. 24 - 1 km. ~~n.~~ s.e. of Karimata
~~grassy thin soil~~
5 03 Cymbopogon tortilis (Presl.) A. Camus A. Chase OK
common on grassy thin soil on limestone
5 04 Pandanus
dominant on limestone ridge

---

2 m.

↓

prostrate, extensive, forming mats

procumbent; flowers yellow-green.

dwarf, depressed shrub; flowers with lavender corollas

prostrate, fleshy; flowers white; fruit fleshy.

small shrub; leaves silky green, fleshy.

prostrate, stems green, scarcely red-tinged, brittle, leaves somewhat compressed, scarcely glossy; flowers pink.

20 m.

Tufted, culms erect; aromatic when bruised.

shrub 2 m. tall.

1956 Ryukyu Is.

Aug 25 Ogami-shima
west and northwest slope
of Shimajiri clay
and soil derived from
it. Mostly cultivated
patches ~~and~~ that do
not look very fertile.
Terraced, edges
covered by Miscanthus
Ardisia, and a small bamboo.
Patches of forest include
Ficus retusa
Arenga
Ardisia
Raphiolepis
Ficus wightiana
~~Pandanus~~
~~Diospyros ferrea~~
Diospyros
D. maritima
Ficus virgata
Machilus

Sandstone cliffs
with loose irregular
scrub of F. retusa, Cykas,
Scaevola, Pandanus, Miscanthus
with ferns on almost vertical
banks and talus.

Boulders of rough
limestone perched on
the brinks of cliffs,
also scattered on the talus

down to sea below
have a wind-shear
scrub of Ficus retusa,
Scaevola, Pemphis (near sea),
Osteomeles (near sea)
On sloping terrace
is a low degraded wood
of Pandanus
Diospyros maritima
Ardisia
Pittosporum
Antidesma
Arenga
Morus

The steep slope below
the summit is Miscanthus.

Plants seen but not collected
Hoya carnosa
Leucaena glauca
Eclipta alba
Calophyllum inophyllum
Ipomoea batatas
Miscanthus sp.
Pandanus tectorius
Lippia nodiflora

1956 Ryukyu Is.

Aug. 25 – Ogami jima
in scrub forest on
northwest slope.

38405 Arenga tremula (Blanco) Becc.
2 abundant in undergrowth

4 06 Croton cumingii M.-A.
abundant in undergrowth

2 07 Callicarpa japonica Thunb. (det. H. N. Moldenke)
occasional in undergrowth

3 08 Morus australis var. glabra Koidz.
common

2 09 Ficus retusa var. nitida Thunb.
commonest woody plant
on island

~~10 Dios[illegible]~~
~~[illegible]~~

5 10 Diospyros maritima Bl.
very common

3 11 Ardisia sieboldii Miq.
dominant

2 12 Antidesma pentandrum var. barbatum (Bl.) Merr.
common

3 13 Raphiolepis liukiuensis (Koidz.) Nakai
common

2 14 (~~Lil.~~) Liriope spicata Lour.
common in thin places

same –
in dense Ardisia-Diospyros forest

2 15 Derris trifoliata Lour.
common

Ogami Jima

25 m.

A. engleri Becc. det. H. E. Moore
stem 1 m. high;
fruit red when ripe,
panicle cernuous.

shrub 1 m. tall, flowers
white.

shrub 1 m. tall, buds
lavender.

small tree, sterile.

erect shrub 2 m. tall
fruit immature.

~~[illegible]~~
~~tree~~

1k small tree; fruit immature.

small tree, fruit green.
(leaves vary greatly in
size from tree to tree; &
most trees sterile).

shrub 2 m. tall

shrub 1.5 m. tall, ripe
fruit black.

flowers deep lavender

40 m.

OK liana; cauliflorous,
flowers pinkish white.

1956 Ryukyu Is.

(F. superba var. japonica Miq.
38416 Ficus ~~wightiana~~
3 occasional
3 17 Vitis lanata Roxb.
common
3 18 Pouteria ~~ferruginea~~
common P. obovata (R. Br.) Baehni
3 19 (~~Laur.~~) Machilus thunbergii S. & Z.
occasional
3 20 Ficus virgata Reinw.
occasional
3 21 Nephrolepis biserrata (Sw.) Schott
common on rough
limestone boulder
22 (~~Bamboo~~) Pleioblastus gramineus (Bean) Nakai
abundant in undergrowth
and open places.
22a Piper Kadsura (Choisy) Ohwi
~~common in undergrowth~~
~~in terraced land on~~
same slopes
3 23 Ischaemum crassipes var. formosanum (Hack.) Nakai
common ~~sp.~~ in grassy spots
2 24 Imperata cylindrica (L.) Beauv.
common on edges of terraces
2 25 Sporobolus elongatus L.
~~grass~~ occasional along trails
4 26 Fimbristylis dichotoma (L.) Vahl
occasional in grassy spots
4 27 (~~grass~~) Eriochloa procera (Retz.) C.E. Hubb.
occasional ~~along edges~~ in cultivated (~~terra~~) ground.
2 28 Digitaria pruriens (Trin.) Buse
occasional in cultivated ground
~~29 (Bamboo)~~
2 29 Phyllanthus
common in cultivated land

Ogami Jima

ok woody vine; sterile.

small tree; sterile.

small tree; leaves glaucous
beneath; sterile.
ok spreading tree; fruit
immature.
fronds arching;
sterile.

det F. A. McClure small clumps; culms
green, about 1-1.5 m. high;
sterile.
vine; sterile.

10
~~3-5~~ m.

(Hack.) Nakai ok. A. Chase

ok. A. Chase

ok A. Chase

det J. H. Kern

ok A. Chase

1956 Ryukyu Is

38430 Echinochloa colonum (L.) Link
4 common in cultivated ground

4 31 (~~grass~~) Leptochloa panicea (Retz.) Ohwi
local in cultivated ground

3 32 Polypodium scolopendria Burm. f.
common on terrace walls

2 33 Lysimachia mauritiana Lam.
occasional on edges of
cultivated ground

2 34 Paspalum orbiculare Forst.
occasional in grassy places

1 OK 35 Fimbristylis
occasional in grassy places

3 36 (~~celastr.~~) Gymnosporia diversifolia Maxim.
common on rocks and
edges of terraces

3 37 Ficus virgata ? Reinw.
occasional on edges of terraces

~~37 Antidesma~~

1 38 Ficus retusa var. nitida Thunb.
very common on terrace walls

5 39 Fimbristylis dichotoma (L.) Vahl det. J. H. Kern
common in grassy places

1 40 Cyperus
rare in grassy places

38436a Portulaca oleracea L. bare cultivated ground. fleshy.

same –
in thickets around ~~cultivated~~
terraced land

2 41 Ardisia sieboldii Miq.
common

1 42 Pittosporum tobira (Willd.) Ait.
rare

2 43 Antidesma pentandrum var. barbatum (Presl) Merr.
common

OK A. Chase Ogami Jima

15 m. culms ascending

" OK A. Chase

" Microsorium scolopendria (Burm.) Copel.

" OK

leaves fleshy, young
plants seem to be seedlings,
old ones dead.

" OK A. Chase

"

" prostrate shrub,
flowers white.

OK ~ semi-scandent shrub;
fruit immature.

~ semi-scandent shrub,
fruit pinkish.

15 m.

~

15 m. shrub 2.5 m. tall.

OK " erect shrub 1 m. tall.

~ shrub 1 m. tall; ♀; flowers green

1956 Ryukyu Is

38444 Antidesma pentandrum var.
5 – common barbatum (Presl) Merr.
2 45 Pisonia umbellifera (Forst.) Seem. OK
rare
1 46 (~~bamboo~~) Pleioblastus hindsii (Munro) Nakai
common sensu Nakai

same –
on rough limestone
2 47 Wikstroemia retusa A Gray
occasional
2 48 Hedyotis albido-punctata
common in pits
1 49 (~~Legum.~~) Galactia tashiroi Maxim.
occasional

same
on ~~and~~ silty sand outcrop
3 50 Digitaria ~~henryi~~ ~~[illegible]~~ D. sanguinalis (L.)
common on banks along trail
2 51 Fimbristylis dichotoma (L.) Vahl
common on bank
2 52 Hedyotis albido-punctata
common on vertical exposure
2 53 Pteris fauriei Hieron.
on ~~vertical exposure~~ talus bank
5 54 Thelypteris Cyclosorus acuminatus (Houtt.) Nakai
common on talus bank
2 55 Commelina diffusa Burm.
occasional at bottom of
talus bank

same –
on vertical cliff of highly
weathered sandstone.
2 56 Hemigraphis
local

Ogami Jima

15 m. shrub 1 m. tall; ♂; flowers whitish.
" small tree, flowers white.
det. F.A. McClure " small clumps.

20 m.
shrub 1.5 m. tall; flowers greenish yellow.
70 m. fleshy; flowers white.
"

35 m
↓ Scop. OK A. Chase
det. J.H. Kern

. fleshy; buds white.

prostrate, rather extensive; flowers with 3 equal bluish petals.

40 m.
↓
prostrate; flowers white.

1956 Ryukyu Is.

Peucedanum japonicum Thunb.

38457 ~~Angelica~~?
2 common (also on limestone sea-cliffs)

2 58 Pteris fauriei Hieron.
common

5 59 Cyrtomium falcatum (L.f.) Presl
common

3 60 Scaevola sericea Vahl
common locally (dominant below on sea cliffs of limestone)

1 61 Hibiscus tiliaceus L.
common

1 62 Emilia sonchifolia (L.) DC.
rare at base of cliff

5 63 Sphenomeris chinensis (L.) Maxon
abundant locally

on rough limestone just above sea

3 64 Philoxerus wrightii Hook. f.
very local

1 65 Lepturus repens var. subulatus Forst.
common

3 66 Limonium arbusculum (Maxim.) Makino
common

2 67 Pemphis acidula Forst.
abundant

1 68 Boerhavia ~~mutabilis~~ diffusa L. sensu lat.
rare

3 69 Osteomeles ~~anthyllidifolia~~ & subrotunda C. Koch
common, forming very thin mat over flat or sloping pitted surfaces of undercut boulders.

Ogami Jima

210 m
↓
sterile at this season; glaucous.

shrub; fruit white, fleshy (mostly without fruit — due to typhoon?)

ok shrub 2 m. ~~tall~~, badly battered by typhoon.

ok flowers purple, scarcely exceeding involucre.

ok fronds coriaceous.

1-2 m.
↓

ok fleshy, forming a tight mat; buds scarcely pinkish.

mostly sterile and out of reach.

ok depressed dwarf shrub; flowers lavender.

ok prostrate shrub; leaves fleshy; all seen sterile.

prostrate; leaves white beneath; buds pinkish.

prostrate; fruit black when ripe.

Aug. 25 – Ogami Jima – account of vegetation:

Ogami Jima is a tiny island 0.75 km. long, ~~and~~ 0.5 km. wide, roughly diamond shaped, 77 m. high, shaped like an irregular low pyramid. It is situated at 125° 18' 30" E 24° 55' 8" ~~N~~, just 4 km. east of the northern tip of Miyako Jima.

It is essentially a tilted mass of weathered sandstone and clay beds of the Shimajiri formation veneered in part by a layer of raised reef limestone of the Ryukyu formation.

The sandstone is mostly weathered and soft, producing a fine sandy soil, varied here and there by clay. This is mostly terraced and used as garden patches by the inhabitants, who number .

Judging by the unluxuriant appearance of the crops, mainly sweet potatoes,

On the terraces are found the usual community of widespread weeds, such as Echinochloa colonum and other grasses, Portulaca, Fimbristylis of several species, Phyllanthus, Amaranthus and various others.

a little

peanuts, cow peas, and sugar cane, this soil must not be very fertile. This is in spite of the fact that in places it has a high calcium content in the form of fossil and recent marine shells. It is badly eroded locally, but the terraces are mostly well built and the walls held by grass (Miscanthus?, Imperata, and Ischaemum), dwarf bamboo, and various shrubs, such as Ardisia and Ficus retusa. The growth on these walls presents the appearance of hedges. Cycas revoluta is common but more limited.

The soil on the limestone is ~~mostly rather~~ thin and usually exists only in pits and pockets. Great limestone boulders have rolled or slumped down the sandy slopes and exist scattered here and there on the slopes and in an accumulation at the base on the landward edge of the broad reef flat.

Roughly two-thirds of the total area is terraced and cultivated. The remainder is rather varied in its vegetation

The south and west faces of the upper [illegible] sides pyramid, above about 50 m. are densely wooded with a scrub forest dominated by Ardisia sieboldii and Diospyros maritima, with some Ficus retusa, F. wightiana, Ficus virgata, Pouteria ferruginea and Machilus thunbergii. ~~[illegible]~~ This forest is perhaps 6-8 m. high. It has a well developed undergrowth of shrubs up to 2 m. high, especially Arenga tremula, Antidesma japonicum Raphiolepis sp., ~~and~~ young saplings of Diospyros and Ardisia, and locally a small bamboo. Vitis lanata, ~~and~~ Flagellaria indica ~~are~~ ~~[illegible]~~ and Derris trifoliata are common lianas.

On a part of the west slope this forest goes down to the undercut sea-cliffs. Northwestward it becomes more scrubby and degraded with some Pandanus and Morus. Here it is mostly

only about 3 m. high and the canopy is rather open.

The northeast side of the upper pyramid is covered by Miscanthus and scattered shrubs of Raphiolepis except where boulders and crests of limestone project up and are covered by a closely wind-sheared scrub mainly of Ficus retusa.

The lower part of the east slope of the northwest ridge is covered by a mixture of scrubby thicket and Miscanthus, except where there are a few terraces. The east slope is largely terraced but has some ~~soft~~ cliffs of soft weathered sandstone. These are bare in places a with a few ferns and shrubs such as Ficus retusa and Scaevola sericea.

The east ridge is largely Pandanus-scrub, but with ~~some~~ Miscanthus, occas. and ~~various~~ miscellaneous shrubs.

1954 Ryukyu Is

Beach just north of
Aug. 25 – Karimata ~~Beach~~

38470 Portulaca oleracea ? L.
2 common on sand

2 71 ~~Cymodocea ?~~ Halodule ~~Diplanthera~~ pinifolia (Miki) den Hartog det. C. den Hartog 1969
common on sandy reef flat, not uncovered at ordinary low tides

2 72 Thalassia hemprichii (Ehrenb.) Aschers in Petermann
and
Cymodocea rotundata Ehrenb. + Hempr. ex Aschers.
det. C. den Hartog 1969
common on sandy reef flat, not uncovered at ordinary low tides.

Ogami (ctd.)

The lower slopes of the island end in great piles of tremendous limestone boulders, mostly undercut with deep nips between tides. In places there is a bare vertical cliff of soft ~~sands~~ bedded sandstone.

The limestone boulders are deeply pitted and dissected. They are mostly covered, above the zone of intensive spray, by a wind-sheared (or spray-sheared) mat-like scrub of Pemphis acidula, ~~Scaev~~ Limonium and Scaevola sericea. In the ~~rough zone of~~ more protected

OK

1 m — fleshy; flowers 1 cm. across; petals bifid; stamen few.

rhizomes buried in sand, forming thin mat.

OK

rhizomes deeply buried, forming a thin sod.

spots ~~are~~ are thickets, mostly of Pandanus.

In the zone of intensive spray, up to about 5 m. much of the rock is bare and exceedingly rough and sharp. There is a characteristic sparse plant community here made up of the strange dwarf shrub Limonium arbusculum, Pemphis acidula, Lepturus repens, Hedyotis albido-punctata. On gentler slopes, such as the tops of boulders, is a thin mat of Osteomeles and a prostrate silvery-leafed legume. Very locally, just at or above high tide, are small tight mats or cushions of Philoxerus wrightii in pits in the rock.

1956 Ryukyu Is.

Aug. 24 – small bay
2 km. n. of Otaki, s.w. of Manatsu
in low beach scrub

38473 Wedelia biflora (Willd.) DC.
2 common

3 74 Premna obtusifolia R.Br.
common

2 75 Pemphis acidula Forst. f.
common on rocky places
on limestone

2 76 ~~Randia~~ Tarenna
rare

2 77 Hernandia sonora L.
occasional

3 78 Scaevola sericea Vahl
abundant

2 79 Clerodendrum inerme (L.) Gaertn.
abundant

2 80 Vitex trifolia var. simplicifolia Cham.
occasional on limestone rock

2 81 Sophora tomentosa L.
common

2 82 Artemisia ~~[illegible]~~
common A. capillaris Thunb.

growing submerged
on sandy reef flat, forming
a sod.

4 83 Thalassia hemprichii (Ehrenb.) Aschers. in Petermann; Cymodocea rotundata Ehrenb. & Hempr. ex Aschers.
rhizomes deeply buried

6 84 ~~Diplanthera~~ Halodule uninervis (Forsk.) Aschers. det. C. den Hartog 1969
rhizomes buried in sand

1–2 m
↓

OK sprawling aromatic herb.

OK – shrub, m. tall,
– flowers greenish

OK low shrub; leaves fleshy.

shrub 1 m. tall;
– fruit immature.

OK – shrub 1.5 m. tall; sterile.

~~Is~~

shrub, m. tall;
– fruit white.

OK – low arching shrub

procumbent shrub
– with ascending branches.

OK – shrub 1.5 m. tall (others taller); sterile.

– juvenile foliage from plants with fruiting part completely dry.

0 m.
↓

OK tips round

Halodule uninervis (Forsk.) Aschers.
(one specimen) det. C. den Hartog 1969

1956 Ryukyu Is.

Aug. 26 - MCAT Compound,
1 km. s.w. of Hirara
38485 Codiaeum variegatum Bl.
planted around buildings

Hirara and other villages have rather few trees planted - mainly Casuarina, Garcinia, Morus

40 m.

shrub 1.5 m. tall: leaves variegated, twisted; flowers white, very strong honey fragrance at night.

Aug. 27 Ikemajima

Peninsula with village a mixture of cultivated plots with limestone outcrops with Pandanus and mixed scrub. Some planting of Calophyllum.

East of bay is a large area of salt marsh — grassland of Paspalum vaginatum, Panicum repens, Eleocharis 2 spp. with some of several species of Fimbristylis and one of Cyperus.

The soil is a coarse shell sand. It is turned up in places to make sweet potato patches, with drainage channels between. Sweet potatoes either do not do well or are all harvested at this season. ~~It is~~ There are two dams across the entrance to the bay, but one has a sluice which lets in the salt water at high tide — also there are many holes in and under the dam.

a few small Rhizophora mucronata bushes 1–1.5 m. tall

The east side of the island is largely made up of a sandy loam or silty sand soil, intensively terraced. Along the coast are large coral boulders or outcrops, covered by a dense Pandanus scrub.

The terracing may be as much to preserve water as anything, as where there are no rocks to pile up as walls there are earth walls around the rims of the terraces. In most places there seem to be enough rocks to build walls and on most eminences and some slopes there are remnants of limestone in place. Most limestone areas have a scrub predominantly of Pandanus. The normal limestone scrub flora is found mainly along the stone walls between fields and around terraces. Ficus retusa, F. wrightiana, F. erecta, are common, also Scaevola

A large brackish marsh extends east from the bay north of the drained area. At the head this is dominated by Panicum, lower down by Paspalum vaginatum, liberal admixture of Derris trifoliata.

Paspalum vaginatum margins the upper part of the bay, backed by a belt of Pandanus scrub.

The north coast is lined by a broad belt of Pandanus scrub with little else. This also extends around on the west coast south toward the village. Inland south of the lighthouse is a complex of patches of cultivation and of Pandanus.

The large depression is occupied by a marsh largely of Panicum, bordered by a strip of Imperata.

The soil on this side is generally a chocolate brown clay or clay loam.

In the village is a high limestone ridge, vertical on one side, sloping on the other. The vertical side has little other than Ficus retusa and Piper. The other side has a forest of Ficus, Diospyros, Pouteria, Pterocarpus, etc. with a dense undergrowth about 2 m. tall of Antidesma, Randia, Diospyros, a little Psychotria, with such vines as Piper, Flagellaria and Pisonia aculeata. No Pandanus in this.

Plants seen but not collected
Pinus luchuensis
Casuarina equisetifolia
Calophyllum inophyllum
Leucaena glauca
Ipomoea batatas
Pandanus tectorius
Amaranthus spinosus
Euphorbia prostrata
Lippia nodiflora

1956 Ryukyu Is. Ikema I. Shima

Aug. 27 – Ikema Shima
east of central inlet.
in large brackish
marsh with coarse 0–1 m.
shell-sand soil. ↓

P. distachyum L.
38486 Paspalum vaginatum A det Chase culms erect from
5 dominant in most spots dense sod.

2 87 Cyperus polystachyos Rottb. OK J. H. Kern
common

3 88 Fimbristylis ferruginea var. sieboldii (Miq.) Ohwi det. J. H. Kern
occasional to common

3 89 Ischaemum muticum —— I. crassipes var. formosanum (Hack.) Nakai OK A. Chase
common in drier spots

2 90 Thuarea involuta (Forst.) R. & S. A. OK Chase
common on sandy banks

3 91 Euphorbia chamissonis Boiss. stems spreading;
E. atoto G. Forst.
occasional on sandy banks ~~flowers~~ ~~[illegible]~~ greenish

3 92 Panicum paludosum Roxb. OK A. Chase culms erect from
dominant locally ~~in~~ deeply buried rhizome.

6 93 Fimbristylis ferruginea var. sieboldii (Miq.) Ohwi det. J. H. Kern
very common locally

5 94 Eleocharis caribaea (Rottb.) Blake det H. Svenson
common

2 95 Cyperus polystachyos Rottb.
occasional

5 96 Eleocharis caribaea (Rottb.) Blake det H. Svenson
very common, locally abundant

1 97 Lysimachia mauritiana Lam. OK flowers pinkish white
cultivated
rare on open sand bank

3 98 Digitaria
very common on open
cultivated sand bank

2 99 Potamogeton limosellifolius Maxim. —— sterile
submerged in pools and channels → mixture of several species, among which a Potamogeton, a Naias and a Characean species. det. C. den Hartog 1969

1956 Ryukyu Is.

37500 Chara zeylanica
3
common in open channel

3 01 Ruppia maritima L. (fruit) det. C. den Hartog 1969
~~Potamogeton pectinatus L.~~
common in open channel

4 02 Eleocharis dulcis (Burm. f.) Trin. ex Henschel det. H. [illegible]
common locally, in water

3 03 Fimbristylis ferruginea var. sieboldii (Miq.) Ohwi det. J. H. Kern
occasional on cultivated
sand banks

2 04 Polygonum japonicum Meisn. ?

same — in and around cultivated
patches of fine sandy loam

2 05 Commelina diffusa Burm.
occasional

1 06 Justicia
rare

1 07 Arachis hypogaea L.
cultivated

2 08 Glycine max (L.) Merr.
cultivated

1 09 Wedelia biflora (L.) DC.
occasional in hedges, ~~and~~
on terrace walls and in
waste patches

3 10 Ficus erecta Thunb.
common in hedgerows on
stone-walls

3 11 Phyllanthus Breynia
rare in hedgerows

6 12 Morus australis var. glabra Koidz.
common in hedgerows

Ikema Shima

0 m. slightly rough, malodorous.
↓
sterile

5–20 m
↓
prostrate; 3 large
lavender-blue petals.
flowers pinkish
decumbent herb; flowers
ok orange

ok flowers purplish

ok decumbent; flowers
yellow; mostly sterile

ok shrub 1 m. tall, figs
green; said to be eaten
when ripe.
shrub 1 m. tall;
flowers yellowish.
shrub 2 m. tall; ripe fruit
[illegible] red, pleasant flavored,
eaten.

1956 Ryukyu Is.

385 13
7 common in hedgerows and waste
1 14 Digitaria ~~chinensis~~
common in field D. violascens
1 15 Oxalis corniculata L.
common in field
2 16 (~~grass~~) Eriochloa procera (Retz.) C. E. Hubb.
common in field
1 17 Amaranthus lividus L.
rare in field
3 18 (~~grass~~) Leptochloa panicea (Retz.) Ohwi
common in field.
3 19 Dactyloctenium aegyptium (L.) Beauv.
common in field
2 20 Eclipta alba Hassk.
~~21~~ common in damp spot in field
2 21 Phyllanthus
common in field
2 22 Euphorbia hirta L.
common in field
5 23 Aster
Erigeron
rare (much more common
in brackish marshes)
3 24 Portulaca oleracea L.
common on bare soil
2 25 Aneilema Murdannia nudiflora (L.) Brenan
common locally
1 26 Wahlenbergia gracilis (Forst.) A.DC.
rare along trail
2 27 Cyperus compressus L. ok J.R. Kern
common locally in fields
1 28 Sida
rare along trail
29 ~~Parietaria~~ Pouzolzia indica var.
rare along terrace wall of earth

Ikema Shima

5-20 m. flowers deep lavender
spots
det A. Chase culms spreading
ok flowers yellow; pods erect.
ok A. Chase
ok A. Chase
ok A. Chase culms spreading
ok ray white.
erect
ok
decumbent branched
herb 1 m. long, flowers white.
ok prostrate, brownish green.
decumbent to ascending;
flowers lavender
ok flower lavender.
ok
flower orange.
angustifolia (Wight) Wedd.

1956 Ryukyu Is.

Ikema Jima, E. of head of central inlet
on grassy-brushy slope of fine
sandy loam.

2 38529a Cymbopogon tortilis (Presl) A. Camus OK! A. Chase
very local

1 30 Scleria
rare

3 31 Scaevola sericea Vahl
common

2 32 ~~Osbeckia chinensis~~ Melastoma candidum var. nobotan (T.) Makino
locally common

1 33 Cassytha filiformis L.
common, mostly on grass.

2 34 Imperata cylindrica (L.) Beauv. OK A. Chase
common, rhizomes deeply buried

3 35 Fimbristylis monostachya (L.) Hassk. det. J. H. Kern
common

3 36 Sacciolepis indica (L.) Chase ex A. Camus OK A. Chase
common

3 37 ~~Angelica~~ ? Peucedanum japonicum Thunb.
rare

Aug. 27 Ikema Shima, near
upper part of ~~bay~~
central inlet
in cultivated fields

4 38 Echinochloa colonum (L.) Beauv. OK A. Chase
common

8:

in brackish marsh

5 39 Derris trifoliata Lour. OK
very common

in hedgerows between cultivated
1 40 Gardenia jasminoides var. grandiflora Nakai
very rare

Ikema Shima

15 m.
↓

aromatic when bruised

rounded depressed shrub 0.4 m. tall;
fruit white, fleshy.
depressed shrub.

yellowish green

erect

sterile at this season.

3 m.

culms ascending

1 m.
↓

tangled vine, forming
low mounds; flowers pinkish white.

patches
10 m.

shrub 1 m. tall, sterile.

1956 Ryukyu Is.

1 38541 Lygodium microstachyum var. glabrescens Nakai
common

2 42 Sida
occasional

1 43 Leucas
rare in crevices in limestone walls

2 44 Indigofera liukiuensis Makino
rare along trail

1 45 Lactuca indica subsp. typica
occasional

2 46 ~~Clerodendrum~~ Callicarpa japonica det. H. N. Moldenke
occasional

2 47 Vitis lanata
occasional

2 48 Ampelopsis ? brevipedunculata var. maximowiczii (Regel) Rehd.?
occasional

1 49 Hibiscus tiliaceus L.
common

1 50 ~~Amelanchier~~ Osteomeles subrotunda C. Koch
rare, seen on only one rock

1 51 (~~sp.~~) Ormocarpum cochinchinense (Lour.) Merr.
common

5 52 Callicarpa dichotoma (Lour.) K. Koch det. H. N. Moldenke
rare

2 53 Hibiscus rosa-sinensis L.
rare, probably persisting from planting.

~~54 Psychotria serpens L.~~
~~very common in~~

Aug. 27 · Ikema Shima n.w. side
in vicinity of light-house

4 54 Psychotria serpens L.
very common in Pandanus scrub

1 55 Mallotus japonicus M.-A.
very local

Ikema Shima

10 m. ↓

fronds tangled in bushes

flowers orange.

flowers white.

ok prostrate; flowers bright red

erect, flowers yellowish white.

Thunb. shrub 0.6 m. tall, flowers lilac.

vine; fruits said to be edible

vine; sterile.

ok flower yellow with maroon center.

prostrate, fruit black.

shrub; only one flower seen, cream striated with brown.

shrub 0.7 m. tall, buds lavender; fruit immature.

ok shrub 1.5 m. tall; flowers scarlet.

20 m. ↓

ok tangled vine, fruit immature.

ok shrub 1 m. tall.

1956 Ryukyu Is.

38556 (~~tag.~~) Rhynchosia minima (L.) DC.
3 common in lighthouse yard

in hedgerows in cultivated land south of lighthouse
2 57 Ficus ~~wightiana~~
common F. nipponica var. japonica Miq.
1 58 Phyllanthus?
rare
3 59 Ficus retusa var. nitida Thunb.
very common
2 60 Antidesma pentandrum var. barbatum (Presl) Merr.
occasional
2 61 Ardisia sieboldii Miq.
occasional
4 62 Wikstroemia retusa A. Gray
common
2 63 Boehmeria ~~nitida~~
occasional B. nivea (L.) Gaud.

Aug. 27 Ikema Shima
in main village
in forest on high ~~rock~~ limestone ridge
3 64 Piper kadsura (Choisy) Ohwi
common, only fruiting where out in sun on bare rock
4 65 Randia
common in undergrowth
2 66 Diospyros maritima
common
1 67 Murraya paniculata (L.) Jack
occasional in undergrowth
2 68 Psychotria liukiuensis
occasional in undergrowth

38566a Flagellaria indica L. ok vine; sterile
common

Ikema Shima

20 m. prostrate; flowers yellow

15 m.

↓ shrub 1.5 m. tall; sterile; sap milky.

— shrub 1 m. tall; bud only.

shrub 2 m. tall; sterile.

shrub 1 m. tall, flowers yellowish, ♂.

— shrub 2 m. tall; sterile.

shrub 1 m. tall; buds green.

— low shrub; sterile.

20 m.

↓

climber; fruit immature.

— shrub ~~x~~ 1-2 m. tall; fruit immature.

— shrub 2 m. tall (others much larger); sterile.

— ok shrub, sterile.

shrub 0.8 m. tall; sterile.

1956 Ryukyu Is.

38569 Ardisia sieboldii M.q.
2 common in undergrowth
3 70 Pisonia aculeata L.
occasional
3 71 Pouteria ~~ferruginea~~
common P. obovata (R.Br.) Baehni
Pongamia pinnata (L.) Merr.
2 72 ~~Pterocarpus?~~
common
1 73 Hoya carnosa (L.) R.Br.
occasional, climbing
on rock wall.

same along roadsides
1 74 Commelina
occasional
1 75 Emilia sonchifolia (L.) DC.
occasional
1 76 Lactuca indica subsp. typica
occasional
1 77 ~~Vigna sinensis cylindrica~~
cultivated Dolichos lablab L.
1 78 Setaria viridis
common S. italica (L.) Beauv. det. A. Chase
5 79 Boerhavia diffusa L. sensu lat.
seen on one rock wall only.
5 80 (~~[illegible]~~.) Tylophora tanakae Maxim.
occasional
1 81 (~~tit.~~)
common
4 82 Croton cumingii M.-A.
common
3 83 Vitex trifolia var. simplicifolia Cham.
on concrete dam

Ikema Shima

shrub 2 m. tall; sterile.

OK scrambling, climbing
shrub; branchlets
conspicuously decussate; sterile
shrub 2 m. tall (others
much larger); sterile.
tree 6 m. tall; sterile

OK vine, leaves very thick;
sterile.

10 m.

two petals large, blue.

OK flowers purple, scarcely
exceeding involucre.
flowers pale yellowish.

flower purple.

[illegible]

prostrate, flowers
pinkish, stamens 2-4.
vine; flowers pale
yellow-green.
flowers violet

shrub 1 m. tall; flowers
white.
almost prostrate.
flowers violet.

1956 Ryukyu Is.

Aug. 27 - Ikema Shima,
south of lighthouse
in hedgerows in
cultivated land

38584 Morinda citrifolia L.
7
rare

4 85 (celastr.?) Gymnosporia diversifolia Maxim.
common

Aug. 28 - MCAT Compound,
1 km. s. of Hirara
weed in lawn

1 86 Alysicarpus vaginalis (L.) DC.

2 87 Sida

Aug. 28 "Elephant Cave"
2 km. e. of Hirara

2 88 ~~Themeda~~ ? Apluda mutica L
in grassy field

Aug. 30 1.3 km. n of ~~Near~~ Matsubara

sandy area back of shore

2 89 Ipomoea pes-caprae var. brasiliense
common I. pes-caprae (L.) Sweet

Ikema I. Miyako I.

15 m.
↓

shrub 1 m. tall; flower
white.

prostrate shrub,
flowers white.

40 m.
↓

OK prostrate; flower dull
carmine.

prostrate, flowers orange

30 m.

OK
A. Chase very glaucous.

2 m.

prostrate, sub-fleshy;
flower bright purple,
deeper in throat.

1956 ~~A~~ Ryukyu Is.

Aug. 30 1 km. e. of Takeb~~ou~~am 1 15/~~200~~ m ↓

in ~~[illegible]~~ rice patch between harvest and plowing

38590 5 Aeschynomene indica L. common in standing water — corolla yellow marked with red.

1 91 Oryza sativa L. persisting — ok A. Chase

2 92 Scirpus mucronatus L. common in standing water — stems sharply triangular.

2 93 Barringtonia racemosa (L.) Bl. rare at edges of — ok — shrub 2 m. tall; sterile. petioles red.

(dope) 3 94 Eriocaulon cinereum R. Br. occasional in drying mud

5 95 Alternanthera occasional in drying mud — creeping; sterile.

2 96 Marsilea quadrifolia L. common in drying mud

2 97 Potamogeton occasional in drying mud

2 98 Torenia? rare in drying mud

4 99 Scirpus juncoides Roxb. common in drying mud

38600 1 Cyperus brevifolius Kyllinga brevifolia Rottb. rare in drying mud — heads green

1 01 Hedyotis ~~V~~ H. tenelliflora Bl. ? rare in drying mud — flowers white.

1 02 Paspalum thunbergii Kunth rare in drying mud — A. det Chase

4 03 Eleocharis acicularis R. Br. common in drying mud

4 04 Echinochloa crus-galli common in drying mud — ~~cu~~ culms ascending & erect.

E. hispida (Retz) Kunth ok A. Chase

1956 Ryukyu Is.

38605 Cyperus haspan L.
2 rare in drying mud
5 06 Cyperus difformis? L. OK J.H. Kern
common in drying mud
2 07 Limnanthemum?
common in drying mud
5 08 Fimbristylis milliacea (L.) Vahl
common in drying mud
~~09 Polygo~~

same- weedy roadsides
and waste places
2 09 Polygonum japonicum Meisn.
moist spot
1 10 Physalis angulata L. vel aff.
2 11 Ipomoea littoralis
common I. gracilis R. Br.
3 12 Cassia tora L.
occasional
1 13 Verbena officinalis L.
occasional
1 14 Ampelopsis brevipedunculata var. hancei Rehd.?
occasional
1 15 Wedelia chinensis (L.) DC.
common
2 16 Ageratum conyzoides L.
common
3 17 Bauhinia japonica Maxim.
occasional on stone walls
2 18 Momordica charantia L.
on stone walls
2 19 Leucas
occasional

MIYAKO

OK

OK OK J.H. Kern

20 m.

flowers white.

flowers pale greenish
yellow
flower rose purple

OK flowers yellow

OK flowers purple

climbing in bushes;
fruit dull blue.
OK decumbent; flowers
yellow.
highly aromatic;
flowers white.
vine; flowers
pale yellow.
foetid vine.

prostrate; flowers
white.

1956

38620 Solanum nigrum L.
1 rare
3 21 Polygonum longisetum De Bruyn
common
5 22 Commelina benghalensis L.
common
2 23 Mirabilis jalapa L.
around old building

same ~~in~~ ~~a small~~ deep pool
among ~~[illegible]~~ rice patches
2 24 Jussiaea repens L.
abundant

2 25 Naias graminea Del.
abundant, submerged
3 26 Ceratopteris thalictroides (L.) Brongn.
occasional, submerged
except tops of fertile fronds
2 27 Marsilea quadrifolia L.
common, submerged
2 28 Potamogeton crispus L.
common, submerged
1 29 Utricularia japonica Makino vel aff.
common, submerged

same on low ridges between
rice fields
1 30 Eupatorium luchuense Nakai ?
common, on limestone
1 31 ~~grass~~ Botriochloa glabra (Roxb.) A. Camus
rare, on limestone
3 32 Scleria levis Retz
common on clay soil

OK flowers white.

erect, flowers pink

stems ascending
flowers deliquesced
OK in afternoon.
flowers rose.

15 m.
↓

OK extensively spreading
over surface of water,
floating organs
white, spongy, sterile.

OK

sterile

det. C. den Hartog 1969 OK sterile.

sterile.

15 m.
↓

flowers white, with
strong honey fragrance.
[illegible] erect

1956 Ryukyu Is.

38633 Lactuca indica subsp. typica
2 occasional on clay soil
1 34 (~~Leg.~~) Desmodium heterocarpum DC.
rare on clay soil
5 35 Lycopodium cernuum L.
very local on clay soil

Aug. 30 . west of Nakazone ~~[illegible]~~
5 36 Fimbristylis dichotoma (L.) Vahl
on dyke between rice fields
very common

Aug. 31 Hirara
3 37 Boerhavia mutabilis R. Br.
in crevice in stone wall

MIYAKO

erect

flowers purplish.

ok

15 m.

det J. H. Kern

5 m.

1956 Ryukyu Is.

Sept. 2 – Southern of Kadena Air Base, Camp ~~Coue~~ Kue, Chatan Mura Nakagami Gun

Group of limestone knobs or pinnacles.

Southernmost large one with summit very rough and dissected into a number of breached holes with pinnacle-like ~~rims~~ fragments of rims.

On lower slopes pines and Miscanthus, rough part with Ficus pumila, F. virgata, F. wightiana, F. erecta, F. retusa, Toddalia, Prunus, "Breynia", Morus, Zanthoxylum ailanthoides? Boehmeria, Ardisia, Hoya, Nephrolepis, Smilax, Maytenus, Paederia, Clematis, ~~B~~ Kalanchoe, Cinnamomum, Premna, Lygodium.

Another knob nearer the sea is essentially similar in structure, a dissected, buttressed summit. Not so much vegetation on or around this one, and with more saline influence, as evidenced by abundance of Ixeris, some Scaevola.

Okinawa

Another knob between the road and the housing area actually seems to have a chimney structure, though the greater part of the rim seems to be missing, broken down, or replaced by concrete.

1956 Marianas

Sept. 14 – S. w. slopes of Mt. Schroeder, above Merizo annex – edge of Conservation area No. 3

Mixed Dimeria and Sword-grass, with considerable Heteropogon. Erosion scars, many of them eroded down to white compact tuff.

Valley has ravine forest with coconuts in lower part, also areca.

Terrace on lower part of ridge looks as though lightly burned some time back.

In the ravine forest dug-dug seems dominant at lower elevations, drops out about half way up.

On top of a spur between 2 main wooded valleys is a patch of well-grown Leucaena 4–5 m. tall, with abundant seedlings. Seems to be on weathered tuff but proper investigation impractical on this trip.

Sept. 14 – Cross Island Road Conservation Reserve #3.

A road goes in from the main corner, then ramifies some. Area said to be used some as Marine Manouver Area. Some conspicuous erosion scars, worn down mesitas, etc.

Extensive erosion scar communities on flat & irregular ground. Plants:

Dimeria chloridiformis
Scaevola sericea
Myrtella benningseniana
Cladium
Dianella
Rhynchospora rubra
Wikstroemia
Geniostoma micrantha
Melastoma
Casuarina equisetifolia
Gleichenia linearis
Decaspermum fruticosum
Phyllanthus saffordii
Schoenus? or Rhynchospora
Timonius albus
Blechnum orientale
Cassytha filiformis
Waltheria indica
andropogon brevifolia
chrysopogon aciculatus

1954 Marianas Is.

Sept. 14 east of Apra Height

38638 Dianella
2 common in erosion scars in savanna on volcanic soil.

Sept. 15 Anao

solution or "worm algal" terraces here have pot-holed bottoms. Soft algae abundant, Porolithon inconspicuous or absent. Depth of water up to 20 cm. a. in potholes, to 50 cm. Bottoms fairly flat except potholes.

Higher terraces are on outer margins, larger basins back of them. Explanation probably more complex than commonly thought. This would be an excellent place to study them.

Sept. 15 – Cliffs above Anao

1 39 Melochia
rare in low scrub on cliff top

Sept. 15 – Anao

2 40 Leucaena insularis var guamensis
occasional in edge of Casuarina just back of low littoral scrub

---

Guam

flowers and ripe fruit white.

shrub 0.7 m. tall; ~~petals~~ purple with white tips.

shrub up to 1 m. tall, flowers white.

1956 Hawaiian Is.

// Sept. 18 – Air trip – Oahu to Hilo.

The lower slopes on leeward Oahu seem to have been taken over very largely by Leucaena glauca, which forms a scrub about 3(-4) m. tall, brown because of pods at this time of the year. This seems to have crowded out much of the Lantana and Opuntia, and even some of the Prosopis.

The slopes above Honolulu have some patches of Casuarina.

West Molokai, at least the south slope, as well as the southeast slope of East Molokai looks very red. The amount of actual bare ground showing would make it necessary to class much of this land as desert. Around on the south slope even the lower slopes are greenish. There do seem to be a few kukui on the upper part of this slope but too far away to be sure.

On n.w. Lanai there are still large red wind-erosion scars. The rest of Lanai

completely covered by clouds. except one bit of east end, which also has serious erosion scars, as well as a strip of Prosopis just back of coast.

Lower slopes of W. Maui are all cultivated except one very hilly section just north of s.w. corner and the steep slopes just east of the s.w. corner. Definite kukui belt in s.w. gulches. Vegetation on s.w. slopes very thin – slopes are reddish from ground showing-through. No trees for a long way up, 3-4000', except in gulch bottoms. South point of W. Maui is steep and barren.

About half of Kahoolawe is red wind-erosion scars, other half scrubby Prosopis, etc.

The lava flows on south west corner of East Maui are dark brown to black, showing almost no signs of revegetation. Some small kipukas should be looked at. May harbor relicts of pre white-man vegetation if lava is not crossable by cattle.

East of this the flows seem

mostly to have some grass. Some are still quite blackish. Eastward the revegetation is more and more marked. Few or no trees up to cloud belt about 1/2-1/3 way up. Slopes extremely ~~d~~ dry and barren east to Kaupo Gap, trees only in ravines and not prominent there.

Floor of Kaupo gap is greenish, with some conspicuous dry grassy areas. North of this the slopes are wooded, with kukui in lower ravines. Lowest slopes are grassy or Lantana.

Waimea Plateau on Hawaii almost entirely grassy.

and other scrubby wood.

Along Hamakua coast the kukui ~~[illegible]~~ lines the gulches crossing the sugar land, down practically to sea level. Sea cliffs and many tops of gulch walls lined by Casuarina.

Still large stretches of unbroken forest on Mauna Kea slopes above sugar land.

Bits of snow about summit of Mauna Kea.

Sept. 18 — Wright Road, about 3 miles n. e. of Hawaii National Park Hq.

3500'±

A large kipuka of Glendale ash, being cut up and cleared for farms. The soil is 20' or more deep. Black on the surface and upper layers, yellow-brown with palagonite below. The vegetation is a sparse forest of Metrosideros 20 m. or more tall, with a few other trees — Xylosma, Cheirodendron, etc. A complete understory of Cibotium, mainly C. glaucum (or C. chamissoi) 4-5 m. tall. The trees are round topped, umbraculiform, with many of lower parts of trunks compound. The Cibotium have very long fronds in comparison with trunks.

Epiphytes very abundant on many of trees. Astelia, Uncinia, several species of Elaphoglossum, Asplenium, Polypodium pellucidum, and many Bryophyta. Even Rubus hawaiiensis is an epiphyte here. Pipturus is scarce in the woods, common along the road. Terrestrial ferns also common.

The road has been opened since 1952. Paspalum dilatatum? — no: Paspalum durvilleanum abundant along much of the road.

The understory of Cibotium, more or less developed, seems to be a widespread feature in these forests, due perhaps to the open canopy.

Sept. 18 – Wright Road, 3 mi. n. e. of Hawaii National Park headquarters
Metrosideros forest with Cibotium

38641 Uncinia
2 epiphytic on tree trunk, common
3 42 Thelypteris?
local, terrestrial

Sept. 19 – Volcano Road –
A small Dendrobium (?) has become very common along lower part of road above Hilo.
Large tract of forest here a great mixture of introduced trees and shrubs, sown by airplane after a fire some years ago. Now being gradually cut down and turned into plantation of Passiflora edulis. Plantations of this common along roads – vines strung up on wires. Yellow fruited.

scapes pendent

rhizome on surface of ground, fronds arching to erect, 1.5 m. long, indeterminate.

Sept. 19 – Saddle Road
Above Hilo beyond ~~[illegible]~~ hospital ~~Saddle Road~~ Melastoma ~~[illegible]~~ has become very abundant. In this entire area a large Nephrolepis, probably N. hirsutula, has also become very abundant. Gloriosa superba established.

Rhus javanica is dominant along roadside in Kaumana area. Above this, a tall Andropogon (like A. scoparius but taller) abundant along road.

Above this +(2000') patches of lehua forest of various sizes, some koa, areas of newer lava with bushy lehua and abundant Cladium angustifolium Gleichenia, etc. This is 1881 flow, others a little older. Apparently as forest ages older Gleichenia gradually dominates under story, then Cibotium may crowd it out, at least in some sites.

Much country with scattered lehua 3-4 m. tall Cladium, Sadleria, etc. around Halfway Point. Some patches of larger, much denser lehua forest, perhaps 15 m. tall. Lehua here very uniform dark gray-green one with light young growth, very pubescent.

1855 flow is rough aa covered by gray lichens, scattered small lehua bushes, widely spaced, 1-2 m., Sadleria, Vaccinium little else. Parts of this even more barren - scarcely any lehua or Sadleria - a little Dubautia and Vaccinium + Polypodium

The part near the top of the saddle has not even lichens. The 1935 pahoehoe overlapping this in the saddle has a little vegetation in cracks, but is essentially bare.

Puu Ula, a small cone in saddle near Humuula, is wooded with some sandalwood, etc. is surrounded by 1935 pahoehoe to form a kipuka.

Cones in saddle are andesitic Mauna Kea cones, surrounded by basaltic Mauna Loa lava, such as 1935 pahoehoe

Off of lava is a savanna with Myoporum, etc. small rounded trees. On far side this becomes almost continuous forest or scrub woodland of Sophora and Myoporum. Seems to be in fair shape. Much bare aa on this slope in saddle - 1843 flow.

Weeds very abundant and almost dominant in flat ground near Pohakuloa. Chenopodium abundant - has odor of C. vulvaria.

changes downward into mixture of Chenopodium oahuense and Trisetum?. the grass taking over gradually downward. This on flat and on lower slopes.

Downward the Myoporum, Sophora and Dodonaea gradually come in.

Trisetum gradually changes to ~~s~~ scrub locally. Much savanna locally also.

Then mostly weedy pasture with scattered patches of trees, stretching to Waimea.—6000'-5000' above Waiki. At Waiki large Eucalyptus and Cupressus groves.

— Some areas of sparse scrub of Dodonaea at 4000' and lower. This becomes more extensive down toward Waimea plain, also denser but of lower stature. Above 1-2 m. lower down up to 1 m. Below this a thin scrub of Sida fallax. Much scattered Opuntia. Evidence of extreme over-grazing.

Lee slopes of Kohala Mt. grassy. Forest boundary very abrupt.

Opuntia said to be held in check by cochineal.

Much Eucalyptus trees around Waimea.

From Waimea toward Kona the slopes along road are covered by a low scrub of Dodonaea with locally some Sida. In some places grass with scattered Opuntia, or Sida with Opuntia. Then solid slopes of Sida.

As slopes get rougher (but not steeper) cactus and Dodonaea become more abundant locally one or other dominant. Few trees, occasional Prosopis.

Then ~~So~~ savanna of lehua, Diospyros, Xylosma with Pennisetum near Puu Kuainiho gradually changing to a well-developed lehua woodland. All on aa lava. Then more open savanna.

1859 aa flow has lichens, thin grass.

Beyond this mixed savanna and cactus opposite Puu Waawaa. Much Melia, some Samanea, Anahulu terrace is andesite.

Below this is lehua savanna, with some admixture of other trees. Everywhere Pennisetum. A little Leucaena.

Open areas of cactus and Pennisetum. Areas of savanna of rather small trees - Diospyros, lehua, etc. Some kukui in low spots and ravines. Some open grass without cactus but some Lantana. Occasional Erythrina. General stature about 3-5 m., spacing 5-10 mm. Many species but mostly lehua and Diospyros.

Some miles of this, rather continuous. Interrupted by ~~fresh~~ relatively recent aa flows - Kaupulehu flow with a little scattered grass. Mixture of exposure of pahoehoe that is very glassy, many collapsed tubes, then later fine aa in channels.

Then more savanna and woodland mixture.

Huehue ranch area - wooded with Grevillea, Jacaranda, Schinus terebinthifolius, some kukui etc. Open woodland with closed forest patches, up to 20-25 m. Much guava, some mango. Open areas, some guava brush. Kalaoa area.

[At Waiohino, south Kona, Schinus terebinthifolius has become a plague, efforts to control it with herbicides]

Kukui becomes more abundant as the road goes downward.

Coffee begins - no shade trimmed to about 3 m. near Honaunau.

Slope down to Kailua a luxuriant mixture of guava, mango, kukui, Cassia, etc. Large areas of sisal. Flower stems harvested for ornamental fencing. It is mixed with Schinus, Lantana, etc. Downward replaced by Lantana, more and more Prosopis which forms a loose thorn forest with solid brush layer of Lantana.

on lower slopes. Below this around Kailua the Lantana drops out.

Beach road south of Kailua through Prosopis forest, roads at least lined with Leucaena 3-5 m. tall. Apparently some of it scattered through forest. Definitely volcanic soil. Some Lantana.

Southward the kiawe is largely replaced by Pithecellobium, Samanea, etc.

Then aa lava with some scattered Leucaena, Waltheria, various weeds. Some Capparis. Polypodium.

Slopes above Kailua and to south on older lava has Samanea, Leucaena, kukui, Lantana, Ipomoea indica, etc.

Southward on main road some 15-20 m. lehua forest, sparse. Then more secondary scrub. Coffee plantations. Scraps of lehua forest. More or less solid coffee over large areas near ~~Kainaliu~~ ~~[illegible]~~ Kainaliu. A Blighia sapida tree ~~[illegible]~~ along road near hospital.

Coffee continues through Kealakekua, through Honaunau, for several miles.

Flat southeast of Kealakekua is at base of fault scarp covered by flows. Pinches off southeastward. Kukui is abundant well below road, also common at level of road.

After the coffee there is a large area of guava-Schinus scrub with mango trees, some patches of avocado and coffee. Some Samanea, kukui. This around Hookena. Beyond here strips of pasture and of mixed forest of kukui, Schinus, guava, etc. some coffee.

Then an area of ragged lehua forest with guava, lantana, Schinus undergrowth, changing to scrub with dropping out of ~~forest~~ trees.

Then bare 1950 aa lava flow. A few ferns near road.

Beyond here the scrub is lower but still very green. Lantana, guava, Schinus, etc. This for a couple of miles then a large patch of well-developed thick lehua forest perhaps 25 m. tall. Some clearing and planting of coffee.
Scrub, scrub forest, lehua forest, clearings, another lobe of 1950 aa flow, etc.

This aa is bare except near road, where weeds and ferns are coming up on somewhat compacted lava.
Forest beyond flow is Kipahoehoe Forest reserve, is thick lehua 20-30 m. high. Not much understory, except ferns, mostly Nephrolepis.

Beyond this the 1919 flow Then more ragged woods. Patches of guava scrub interspersed. This also as understory.

1926 flow has lichens and bushes.

Some coffee being put in even beyond Hoopuloa flow (1926) General vegetation guava scrub with patches of kukui and lehua. Some large open lehua. Second story is guava scrub 2-5 m. tall. A considerable extent of this, varying from very open to closed forest, from 6-8 m. to 30 m. tall.
Some rather extensive aa flows with widely spaced small trees. The 1907 ~~ff~~ aa flow has lichens and a few small bushes. Some Touneraea locally.

At about 78-80 mi from Hilo the forest gives way to open aa with only scattered trees. 1907 flow looks very fresh - aa with no vegetation - very rough. 1887 flow has also almost no vegetation except perhaps thin lichens.

Open woodland, mostly lehua, on aa, with grass and bushes, beyond here, changing to savanna. Then a pahoehoe flow with Sadleria, low bushes, etc. around Kahuku Ranch. Some smooth green pasture here.

Then more pahoehoe with thick bushes of lehua. Then some miscellaneous introduced trees. Some good sparse lehua forest at and beyond South Point road. Also patches of Eucalyptus. Large area of solid Schinus terebinthifolius up to about 5-6 m. tall very dense. This on slopes and coastal flats near Waiohinu.

Some sugar cane bet. Waiohinu and Naalehu. Some Leucaena also, and open pasture land.

Beyond Naalehu much open pasture, very green. Mostly Panicum maximum. This is a large exposure of yellow-brown Pahala ash. Slopes gently to flats along coast.

North of ~~Pahala~~ Naalehu a rough lava flow, then a large area of open pasture with much Leucaena locally abundant Samanea trees. Interrupted by

somewhat younger flow. Much of the pasture is ~~B~~ aa and much of it covered by Leucaena scrub.

Coastal flats below are barren black lava.

Area becomes more and more brushy, much lantana, kukui fill valleys.

Large horst blocks up slope on left. Some more pasture. On hills large patches of planted Eucalyptus. In some rocky strips Samanea is dominant. Near Pahala large areas of brushy pasture, abundant Samanea, rows of Eucalyptus. Some good pasture, some lantana. Gradually changes to lehua woodland, lehua 5-8(10) m. tall, some grass, mostly Lantana between. Then pahoehoe with low native scrub with scattered lehua. Large area of this, but with some pasture and much cane above road. An area of open Grevillea with native shrubs such as Styphelia, Dodonaea, small lehua, etc.

Then a considerable area where first Grevillea, then lehua woodland have most of trees dead at tops. Have been this way for years, see Wentworths. Actively growing from bases.

Large stretch of pahoehoe with sparse scraggly bushes and locally small trees mostly lehua. Some extensive pastures up the slope. Dodonaea scrub above pahoehoe and below pasture locally. Apparently slopes above pasture are wooded, but not seen well from road.

Much low brush and patches of lehua wood. Park boundary. Inside extensive aa fields with scattered lehua scrub. Escarpment - Kuiki fault - above road, covered by low scrub, above the aa fields. This aa is the Kau Desert.

With change to pahoehoe trees get sparser but larger

and low scrub between gets much thicker.

		Sept. 19 - just north of Kuainiho Cove, south of Waimea in sclerophyllous savanna		
	38643	Pennisetum dominant grass		caespitose
2				
②	44	Xylosma ? occasional		small rounded tree; flowers greenish.
7	45	Diospyros ~~sandwicensis~~ ferrea var. very common		small rounded mound-like tree.
3	46	Diospyros ~~sand~~ ferrea var. very common		small rounded tree; fruit not ripe.
2	47	Chenopodium oahuense very common		shrub 1 m. tall, with an unpleasant odor.
	~~#8~~			
		Sept. 19 - Humuula Saddle on lava rock along road.	2000 m.	
5	48	Sicyos local		extensive vine; inflorescences erect, flowers white.
		Sept. 19 - Kaumana section, Hilo		
3	49	~~Osbeckia~~ Melastoma malabathricum L. abundant in waste places		shrub 2 m. tall. flowers bright rose pink.

Sept. 20 - Lava Tree Park, Puna
Small shallow valley with standing tree molds up to 4-5 m. tall. Some are clearly Metrosideros. Made by 1840 flow. Lava cooled around trunks, then liquid drained off or shrunk away from loss of gas.

Sept. 20 - Original vent
of 1955 eruption

Slaggy pahoehoe in transition to aa. Black & reddish. Nephrolepis and Erechtites hieracifolia (purplish fls. & and but not marginal lvs.) well established near edges. In actual vent Nephrolepis sporelings abundant, mostly in sheltered situations, from minute to fronds several inches long. Out on open lava field no vegetation except sporelings in crevasses where they are ~~abun~~ frequent. Nephrolepis is probably N. exaltata.

Doty's intermediate area Kii flow ropy lava with much pumice on surface in places. On normal areas there seems to be no vegetation at all in full sun. Many sporelings up to several inches long in deep crevasses.
In places compacted by bulldozer Cyperus sp., Fimbristylis cymosa and Digitaria sp. Euphorb. have taken hold and are fruiting.
— They seem to have bulldozed

a road directly through the study area.
The Digitaria and Fimbristylis are really growing on a glob of soil brought by tracks of bulldozer.

Where Kaueleau flow reached the sea it is all aa very rough and broken, though there are a few pahoehoe-like large boulders apparently floated down on the flow.
The small pond enclosed by a high bar of black gravel is reduced to about 3 m. across at widest. No fish seen, one crab. No vegetation evident in it or new lava. The gravel is surprisingly rounded if as Wentworth says, it is from fresh lava.
Where flow lobe protrudes out into sea it is hard to distinguish new lava from old. Much rounded beach material has been thrown back onto the rough surface. The large boulders at and below high tide level are thickly covered by algae, but may well be the old rock.
The clinker surface above high tide, clear back is absolutely free of macroscopic vegetation.

surrounding forest, on one side of flow largely Pandanus with Thespesia, Samanea, Metrosideros, guava etc., other side dominantly Metrosideros, some Pandanus.

Keekee Flow - just above road a tiny pit or kipuka with remains of large dead tree knocked down, a small Pipturus bush 1.5-2 m. tall and a great Canavalia vine growing out of pit and covering a good-sized patch of aa. Also a dead Passiflora foetida. Makes a green patch on lava. The lava is aa but with large pahoehoe blocks floating in it.

Kehena Flow - rough aa
New beach and beach ridge formed in Doty's study area. Pebbles again surprisingly rounded. No vegetation either on beach ridge or on aa (except one tiny dry plant in low wet spot back of beach ridge)
On point a hard columnar layer ~~aa~~ reaches to above high tide. This, in places, has a thick growth of algae. None of the rough lava,

where it reaches the water, seems to have anything.
This flow has many kipukas, even almost down to the water's edge.

High point on upper road where it crosses flow - a mile or so below 2 conspicuous cones. Here the lava is very rough aa. No vegetation seen except a few tiny fern sporelings down in holes.
This flow cut through a Metrosideros forest. The edges and smaller kipukas have dead trees, a few with some green branches.

Kamalii - fresh lava, still steaming a good bit. An abundance of Nephrolepis, even fair sized, growing on new lava here.

At Nii house the earth is cracked and sulfur-laden steam issues from cracks and holes, as well as from vents from which lava issued. Crystalline sulfur is being deposited around all holes and cracks, some assuming a beautiful fine branching form. The steam apparently contains S vapor but no or very little SO_2. A collapse pit about 80-100' across and 150' deep, vertical sides below-horiz in old lava.

Trees here killed or defoliated by fumes (SO_2) on ~~east~~ south side trunks are now putting out a profusion of short branches resulting in a Lombardy poplar aspect.

On ground denuded by heat and steam Cyperus sp. Nephrolepis sp., Erechtites ~~[illegible]~~ hieracifolia Paspalum sp. Digitaria sp. are all colonizing. This is old lava. New has a few Nephrolepis and a profusion of sporelings in crevices

Sept. 20 Just northwest of Pahoa, Puna 650'
38650 ~~Sobralia~~ Arundina
#3 common ~~on~~ grassy roadside

Sept. 20 Kamali, 3 miles south of Pahoa 1050'
on broken lava in open, near steam ve
4 51 Andropogon
very common
3 52 Nephrolepis multiflora det. Jarrett, 1976
very common

erect, stiff, flowers with white petals, purple lip.

caespitose, very erect.

fronds erect, often much larger.

38653 Cyperus
3 very abundant

Sept. 20 - Halekamahina,
4.5 miles east of Pahoa
in compacted area on fresh lava
1 54 Digitaria
one plant on bit of soil
1 55 Cyperus
occasional
1 56 Fimbristylis cymosa
rare, one plant in bit of soil

Sept. 20 - Lava Tree Park,
east of Pahoa
1 57 Drymaria
weed in trail

Sept. 21 - Air trip Hilo to Honolulu.
Cloud layer hanging half way up south slope of Haleakala.
Considerable green grass on lower slopes above Hana. But lower fan of Kaupo Gap is brown and dry. A small black flow that looks very fresh, uncut by waves, at west end of fan. Low cliffs cut in most of the rest, as well as along coast west of this.
Lower slopes west of fan a series of dry, somewhat grassy flows, apparently

400'

650'

prostrate, flowers white,
~~petiole~~ pedicels glutinous,
detaching at maturity.

no trees along this entire coast
Lower west slopes below Kula are Prosopis forest. Much ~~grass~~ green grassland and planted forest (Eucalyptus ?) around Kula, about 1/3 - 1/2 way up mountain.
South-east slopes of West Maui are very dry, brown, no trees up 3/4 the way. Isthmus all in sugar. Sugar on flats on south side of base of West Maui.
Kukui forest patch in deep valleys, with other forest above, but outer slopes and ridges dry

up at least 3/4 the way. Longwest slopes above and beyond Lahaina mostly in sugar, possibly some pineapples but too far away to be sure

Slopes of Lanai toward Maui Channel are mostly bare red erosion scars, some dry grass, kiawes along coast and running up ravines. A road running down one of the flat topped ridges. probably the one Munro mentioned over the top. Lower parts of slopes have more grass than upper parts. Wind grooving very prominent in kiawe forest along north coast. Brought out very prominently by sand in western part where almost parallel with coast.

On West Molokai the Mormon Land Strip seems to have practically vanished, but perhaps we are too far away to see it. Large bare red wind erosion scars on south west slope.
West point has sand dunes.

Sept. 22 – Honolulu, slopes of Diamond Head –
Went with G. C. Munro to examine his dry-land plant garden.
The slopes are very dry, no sign of any moisture at all. Vegetation is sparse Prosopis, more developed in ravines. Thin grass ground cover is completely dry. Many openings and some of sparse Prosopis woodland filled with Leucaena scrub. This is about 2 m. tall. The Munros are trying to clear it out by hand and by chemicals. Also are killing some Prosopis with chemicals.
Munro has been planting seeds of all sorts of dry country native plants here. Figures that with seed in the ground a good rainy season will bring out the plants. Erythrina sandwicensis ~~will~~ has come up commonly throughout area, not only in the garden itself, but generally on the slopes. Lipochaeta sp. is common, native here. Several plants of Hibiscus brackenridgei from Lanai are growing well.

1956 Hawaiian Is.

One large plant of Jatropha gossypifolia, bare of leaves, seen. Munro seems to value it.

The theory behind this reservoir is that the extreme droughts will eliminate all except the most drought resistent species. This is undoubtedly sound.

Rainfall here perhaps 5" per year, acc. Munro.

In areas where water is so scarce its availability may actually become an effective single factor control of vegetation. Other factors may even exert influence only through effect on availability of water.

California - ~~[illegible]~~

Sept. 29 - Coast Ranges between San Francisco and Santa Barbara, from air.

Grassy hills along inland side of Salinas Valley show a remarkable drainage pattern - apparently the main drainage lines are determined by the bedding of the Monterey (?) formation. The finer drainage seems to be at right-angles to the main valleys or ravines, whatever their direction.

Higher parts of these ranges are chaparral covered, but with considerable interspersed grassland. Should be very interesting for study, especially in spring.

All hills here have a peculiar rounded contour, no sharp breaks or escarpments. Most ravine bottoms also rounded, but some sharp.

Erosion scars in grassland show up white, many have thin chaparral.

1956 California

L.A. to Redlands by Metro Bus.

Sept. 30 – Bet. Los Angeles and Pomona, along Garvey Ave.

Walnut groves seem in rather poor shape, but may simply be lateness of season.

~~Bet.~~ In Puente Hills are some citrus groves. These are mostly in very poor shape, the branch tips mostly dead, some trees largely dead.

Here is some open woodland with Quercus agrifolia and, probably, Q. engelmannii.

Opuntia abundant only on one fenced clump of hills just outside Pomona City Limit.

Smog so bad today that mountains are completely obscured from entire Garvey Ave. route L.A. to Pomona – not a glimpse except from pass over Puente Hills, where Cucamonga and Ontario peaks were visible. Forest fires probably contribute to smokiness.

Lower mts. visible from ? LaVerne Ave. above Pomona but nothing to be seen to east of this, above Claremont, from Cucamonga Ave. and Claremont, except ghostly outline of summit

of Ontario and Cucamonga peaks.

Orange groves here also mostly in bad shape, with much dead wood. Some, however, not in such bad condition.

Blanchard Park seems still to be in fairly natural condition, but shows some signs of disturbance.

The wash east of Claremont on 6th is still in more or less natural state in limited areas, with Lepidospartum brush.

Toward Upland the younger orange groves seem in fair shape, but older ones in very poor condition.

East of Upland on San Bernardino Rd. is still some scrub area, with Lepidospartum in washes, Eriodictyon, Eriogonum fasciculatum etc. on flats.

Much active subdivision going on, esp. around Cucamonga. Extensive vineyards to east seem in good condition. Rather yellow at this season.

(ctd. p. 194)

continued from p. 6

1956 Coll Tafosky

Aug. 7 – MCAT compound, 1 km. s. of Hirara

14 Hedyotis

Aug. 10 – Hirara

15 Commelina diffusa Bl. det FRP

Aug. 11 MCAT Compound 1 km. s. of Hirara around compound buildings

2 16 Youngia japonica (L.) DC.
4 17 Lactuca indica subsp.-laciniata (Houtt.)
1 18 Emilia sonchifolia (L.) DC.
~~19 Sonchus~~
1 19 Sonchus oleraceus L.

Aug. 13 near MCAT, 1 km. s. of Hirara

on low limestone hills

5 20 Bauhinia japonica Maxim.

2 21 (~~comp.~~) Carpesium cernuum L.
2 22 Digitaria henryi
5 23 Premna (P. [illegible] obtusifolia R. Br. det A. Shaw)
1 24 (~~orchid~~) Geodorum nutans (Presl) Ames
5 25 Cassia mimosoides (C. leschenaultiana var. [illegible] Ohwi)
5 26 Apium ~~[illegible]~~ leptophyllum (Pers.) F. Muell. ok
3 27 Carmona retusa (Ehretia microphylla Lam.)
1 28 (~~grass~~) Eccoilopus cotulifer (Thunb.) A. Camus det A. Shaw
5 29 Antidesma? pentandrum var. barbatum (Presl) Merr.
6 30 ~~Phyllanthus~~ Securinega flueggeoides M.-A.
3 31 Callicarpa japonica Thunb.
4 32 Rhynchosia? minima (L.) DC.
1 33 Lysimachia mauritiana Lam.

Miyako I. Ryukyus

41 m.

prostrate flowers white

decumbent, flowers white, two petals large.

40 m.
↓
ok

— flowers yellow
— flowers pale yellow
ok
— flowers purple, little exceeding involucre.
flowers pale yellow

40 m
↓

vine, flowers pale greenish yellow
— disk dull whitish.
— leaves glaucous green.
— fruit green
— flowers white, fragrant.
— flowers yellow.

flowers pinkish white, anthers deep purple.

flowers pale green.

— flowers lavender-pink.
vine; flowers yellow.

OK

1957 Ryukyu Is. Tajuku

Miyako

Aug. 16 - Hirara 5 m.
around waste places in town

1 34 Setaria viridis (L.) Beauv. — det. A. Chase
7 35 Digitaria henryi ? Rendle — det. A. Chase — decumbent, glaucous.
5 36 Amaranthus spinosus L. — ok — stems red
7 37 Amaranthus spinosus — stems green
7 38 (~~grass~~) Leptochloa panicea (Retz.) Ohwi — ok A. Chase
5 39 Eragrostis multicaulis Steud. — ok A. Chase
2 40 ~~Sisymbrium~~ ? Rorippa atrovirens (Hornem.) Ohwi & Hara — flowers yellow
5 41 Hibiscus rosa-sinensis L. — flowers red.
3 42 (~~asclep.~~) Tylophora tanakae Maxim. — flowers yellowish green.
6 43 Tridax procumbens L. — ok — rays yellowish.
2 44 ~~Phyllanthus~~ (Securinega flueggeoides M.-A.)
4 45 Bidens pilosa var. B. bitemata Merr. & Sherff — rays white
5 46 Cyperus rotundus L. — ok
7 47 Setaria ~~viridis~~ ? lutescens (Weigel) F.T. Hubb. — ok A. Chase
9 48 Lepidium virginicum L. — ok — petals minute, white.
1 49 Plantago asiatica L.
6 50 Amaranthus hybridus L. — stems reddish

Miyako, Aug. 21, 1956 coll. D.B. Doan
1 Podocarpus macrophyllus (var. linkiuensis Wak. = forma grandifolia Pilger) L.

Miyako, Aug. 30, 1956 coll. R.E. Hetzler
1 Euphorbia neriifolia L.

1956 California

(ctd. from p. 189) In Fontana even the Eucalyptus trees in vicinity of steel mills have dead tops. The odor, for several miles, is quite disagreeable. The effect on Eucalyptus shows very markedly in Fontana city, several miles east and east northeast. This effect is rather irregular and, of course, may possibly have nothing to do with the mill fumes. Noticeable eastward along Foothill Blvd. Fades out just inside Rialto city limits, but still visible 0.5 km. or so to south almost into Rialto proper.

Localized very poor Eucalyptus just outside San Bernardino but may be attempted killing with chemicals, as only certain rows affected.

Santa Ana River bed between San Bernardino and Loma Linda has evidently been recently burned. Vegetation is mainly Salsola kali v. tenuifolia and dead Populus(?) trees. A very few Eucalyptus seen with a dead upper branch or two.

In Loma Linda this becomes noticeable but by no means serious as in Fontana.

Citrus groves in much better shape here, but dead tips still quite noticeable. Walnuts also much better. Some individual trees much worse than most. Groves much better cared for here. Here, bet. Loma Linda and Redlands, the smaller trees seem most affected, the larger ones scarcely or not at all.

Oct. 2 – Angeles Crest Road over San Gabriel Mts.

On Cismontane side the lower slopes are covered principally by adenostoma type chaparral, changing upward to a mixture of scrubby Quercus chrysolepis, Q. wislizenii(?), Q. dumosa(?) (all three showing great leaf variability), Rhus laurina, Rhus diversiloba, Photinia arbutifolia(?), Ceanothus sp., ~~[illegible]~~ etc. Further up the ravines have Pseudotsuga macrocarpa, Acer macrophylla, etc. The slopes a mixture of Ceanothus spp. Arctostaphylos glauca(?), Eriodictyon crassifolium, Brickellia californica, etc. No real conifer belt here, at summit. A few Pinus coulteri (possibly planted) and a few P. tuberculata (?) (probably planted), otherwise only the Pseudotsuga in the canyons. Down on the north slope more or less the same mixture but soon noticeably sparser, more Adenos~~toma~~, then Pinus monophylla with a few junipers, Arctostaphylos glauca very common.

Oct. 2 – Angeles Crest Road, cismontane side
chaparral on steep talus below road
38658 (comp.)
"
occasional
" 59 Photinia (?)
common
" 60 Photinia (?)
common

Oct. 2 – Road through Swartout from Pear Blossom to Cajon Pass.

Above Pear Blossom (where are irrigated orchards) there are some Larrea areas, some Yucca brevifolia, but no extreme desert. Artemisia tridentata on upper part

Along this entire road Eriogonum fasciculatum is common, but apparently principally in the disturbed ground close to the road rather than in the more undisturbed chaparral away from road. It is in bloom or just past in most places at medium or upper elevations, brown and in fruit lower down on both sides. On the desert side the var. polifolia appears near the foot of the slope.

Artemisia tridentata seems well up the ravines on the desert side, almost as high as the pinyon belt extends.

58 shrub about 0.7 m. tall, much branched ~~fr~~ at base, flowers yellow.
59 shrub, flowers dried.
60 shrub; fruit immature.

of alluvial slopes. The road climbs through a mixture of Pinus monophylla, Juniperus, Quercus turbinella, etc. varying locally, with some other shrubs (Prunus andersonii ?) much Chrysothamnus, etc. Pinus coulteri common at higher altitudes, then a true coniferous forest with Pinus ponderosa, Pseudotsuga, and at 6000' and over, Abies concolor, Libocedrus decurrens, and even Pinus contorta var. murrayana. This forest seems in excellent condition, many pines very well-formed, tops mostly undamaged, conical. Some pines with dark trunks, (var. jeffreyi?).

On the slope downward from Swartout the Pinus monophylla forests are the most luxuriant I have seen — trees up to 10 m. tall, in many places only a few feet apart. Little or no juniper. Gradually becomes more open and area gradually more covered by chaparral, the lower the altitude the more dominated by Adenostoma.

Toward Cajon Pass are spectacular wind eroded conglomerate - sandstone outcrops similar to, but even more spectacular than those in Morongo Valley and San Fernando Valley.

Oct. 7 – Flight from Los Angeles to Denver.

Lower end of Silver Lake is flooded by a thin sheet of water – reflects sun very clearly.

Also some pools in Mesquite Lake. There must have been a heavy rain very recently.

Between Zion and Bryce Canyons the aspens show up as brilliant yellow patches. Bright red in canyon bottoms must be Acer nigrum var. grandidentatum.

Scattered patches of aspens and stream valleys filled with them to eastward. Aspens principally on east-facing slopes.

The Green River, east of Hanksville shows stupendous meanders cut in a great vertical walled gorge into an extremely desert plateau. Along the concave sides of the meanders are flats, very green, probably willows or Populus. Water in river is a milky green. East of this near Arches Nat. Mon. are some flat or sloping surfaces of white rock

etc.
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that are cut by joints or bedding planes which are filled with trees making striking parallel lines, in places cross-bedded or cross-jointed. This is on an enormous scale. From a distance looks as though it must be artificially terraced.

In the north loop of the Colorado, west of Grand Junction, there is a spectacular pattern of gorges cut in the north extension of Uncompahgre Plateau. Red and white beds exposed. Plateau is desert. Valley of loop above Grand Junction irrigated and under cultivation.

East of here the plateau is dark with brush. The walls of an enormous dendritic system of canyons cut in it are white with some pink bedding. Small valleys and depressions in plateau are yellow with aspen. This plateau is north of the Colorado.

Grand Mesa, to south and North Mam slopes golden with aspen where the conifers are lacking. Spectacular masses of color.

From here east are alternating masses of golden aspen, red-brown scrub small dark areas of conifers. Valley bottoms are cultivated. To north are large areas of conifers. To south mainly deciduous, possibly oak scrub.

Farther east, much high bare country cut by ravines some filled with golden aspen, others with pines, etc.

Then enormous forests of solid conifers and much very rough high country with patches of snow. The forests are on lower flanks of Mt. of the Holy Cross. Quite a bit of snow on top. Extensive coniferous forests on slopes east of here. Mountain tops grassy, straw-color.

Front Range has extensive grassy tops, conifer-covered flanks, conspicuous gray scree slopes.

1956 - Colorado

Oct. 5 - Auto trip - Denver - Golden - Lookout Mt. - Clear Creek - Idaho Springs - Chicago Creek - Echo Lake - Summit Lake - Mt. Evans - Summit Lake - Echo Lake - Squaw Pass - Bergen Park - Evergreen - Bear Creek - Red Rocks Park - Denver.

The lower hills are grassy or scrubby, with Rhus trilobata (?), Cercocarpus, and a heterogeneous population of Juniperus, varying from a green pyramidal form to a very glaucous pyramidal one, also some prostrate Juniperus communis. This is characteristic of sandstone hills, including the red sandstone and conglomerate beds of Red Rocks Park (these are mostly bare rock with vegetation only in cracks and on ledges, a very small Berberis (Mahonia) is very common) and granite hills and cliffs as along lower Bear Creek Canyon.

Upward, scattered pines appear, soon forming an irregular forest, as at Lookout Mt. On Lookout Mt. a gray squirrel with enormous ears was seen in the pine forest. This pines must be a form of P. ponderosa, but the cones are very small and the trunks vary from red to black, from platy to very rough. It is 2-needled, needles 5-8 cm. long. Mixed with this are a few spruces - apparently Picea pungens and Picea engelmannii. The pines soon change, upward, to Pinus contorta var. murrayana, which forms dense forests on ridges and open slopes, mixed with spruces in canyons. Canyon bottoms, where open, often have Salix and a very narrow-leafed (cont'd on p. 204)

Oct. 5 Echo Lake north slope of Mt Evans, 10,600

38661 Pyrola.
common in Picea forest
forming patches in forest floor.

Oct 5 Mt. Evans, at timberline

38662 Pinus flexilis
common in upper edges of forest
and as isolated individuals above

depressed gnarled bush,
2 m. tall.

Echo Lake 10,600 ft.

Slopes covered by dense forest of Picea, some Abies, a little Pinus contorta up to 20 (rarely 25-30) cm dbh. No dominant size class. Little undergrowth or ground cover, patches of Pyrola, Vaccinium. Abundant lichens (Parmelia) and mosses.

Bog at head of lake dominantly Poa, but with patches of Salix, some Potentilla fruticosa, Sedum common, Gentiana occasional, Pedicularis locally common. Various other herbs. 20-50 cm. of peat.

Populus along streams. These are yellow to orange at this season.

Populus tremuloides comes in at about the altitude of Idaho Springs and soon become very abundant. The coniferous forest changes to almost pure spruce, the two kinds mixed. Large patches especially on slopes are covered by a pure stand of aspen, or mixed aspen and conifers. The distribution of aspen is patchy and shows no order, apparently is result of fire. There are also patches of very even aged small pine that must have resulted from fire. The aspens show a very uneven sequence of color change and loss of leaves. Those in patches on slopes have mostly lost their leaves, though an occasional small patch among conifers is a brilliant yellow, as are usually those along ravine-bottoms. Here and there is one that is a beautiful flame-pink or orange. Occasionally one is still partly green. The trunks are mostly a pale olive drab, but there are occasional areas where they are almost white.

Below 8000' the forests are largely on north-facing slopes. South ones are covered by sparse brush and Juniper. The conifer forests from 8 to 11 or 12000' are mostly spruce, with occasional fir and pine. The growth form is slender spire-like. The forests are dense and rather tall, the trees not very large in diameter. The two species of spruce are not very clearly marked here, but there are green and bluish individuals and ones with pinkish or brownish scaly bark and ones with smooth fir-like white bark. Ripe cones are abundant both on trees and on ground.

There are little undergrowth and little ground cover in this forest. Patches, occasionally of a low Vaccinium (or Salix?) that are turning yellow or red.

At timber-line, Pinus flexilis becomes abundant and in places forms a krumholz. The timber line is uneven but rather abrupt.

All through the upper forests and especially near

timber-line are spruces with dead tops.

Above timber-line the grass is straw-color and varies greatly in density. There is a rich flora of herbs mixed with it. There is a thin (10-15 cm.) layer of mor or raw humus that is rather black.

Upward the grass and other herbs get shorter till near the summit of Mt. Evans there is a very low turf, 1-6 cm. tall, still quite a mixture of species. At the summit this almost disappears, showing only on flattish spots between boulders, in crevices and in sheltered places. Summit 14,260 ft.

The virtual disappearance of vascular plants above 14000 ft. is probably due to the fact that the substratum changes almost entirely to great joint blocks and exposures of a coarse pink granite, with soil only in the pockets where the vascular plants occur.

On the rocks themselves is a small flora of crustose lichens, - black, green, bright yellow-green, yellow, and rarely orange -. The lichens are on all exposures but more abundant on the under sides of overhanging slabs and projections. Near the summit a pica was seen, also a weasel. Other picas were heard. On the slopes was a small flock of medium sized white or partly white birds. Several bright blue small birds were seen. What appeared to be a Nuttall jay was seen at timberline in the pines.

ptarmigan

Rocky Mountain bluebirds?